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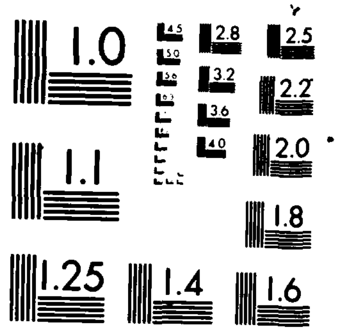

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ARCHAEOLOGICAL TEST EXCAVATIONS AT
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PALOS VERDES PENINSULA,
LOS ANGELES COUNTY, CALIFORNIA

Prepared by:

(3)

ARCHAEOLOGICAL TEST EXCAVATIONS AT CA-LAn-105, -291, AND -1269, PALOS VERDES PENINSULA, LOS ANGELES COUNTY, CALIFORNIA

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Los Angeles District
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This report presents the results of an archaeological survey, test, and evaluation program completed at two locations near White Point, San Pedro, California. Three previously recorded cultural resource sites were (CA-LAn-105,291, and -1269) relocated and evaluated for inclusion in the National Register of Historic Places. Ninety shovel test pits and six 1x1m controlled test units were excavated at the three sites. The artifacts and faunal remains recovered from these sites suggest that additional investigations would yield data useful in addressing some of the research issues of the Palos Verdes area.

Based on the results obtained during the archaeological text excavations at Bogdanovich Park and White Point, the cultural deposits present at CA-LAn-291 and -1269 constitute National Register-eligible cultural resources. On the basis of integrity and research potential, CA-LAn-105 is not considered eligible because it is not likely to yield information important to local or regional research questions.

ABSTRACT

This report presents the results of an archaeological survey, test, and evaluation program completed at two locations near White Point, San Pedro, California. Three previously recorded cultural resource sites (CA-LAn-105, -291, and -1269) were relocated and evaluated for inclusion in the National Register of Historic Places. Ninety shovel test pits and six 1 x 1 m controlled test units were excavated at the three sites. The artifacts and faunal remains recovered from these sites suggest that additional investigations would yield data useful in addressing some of the research issues of the Palos Verdes area.

Based on the results obtained during the archaeological test excavations at Bogdanovich Park and White Point, the cultural deposits present at CA-LAn-291 and -1269 constitute National Register-eligible cultural resources. On the basis of integrity and research potential, CA-LAn-105 is not considered eligible because it is not likely to yield information important to local or regional research questions.

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PROJECT INTRODUCTION

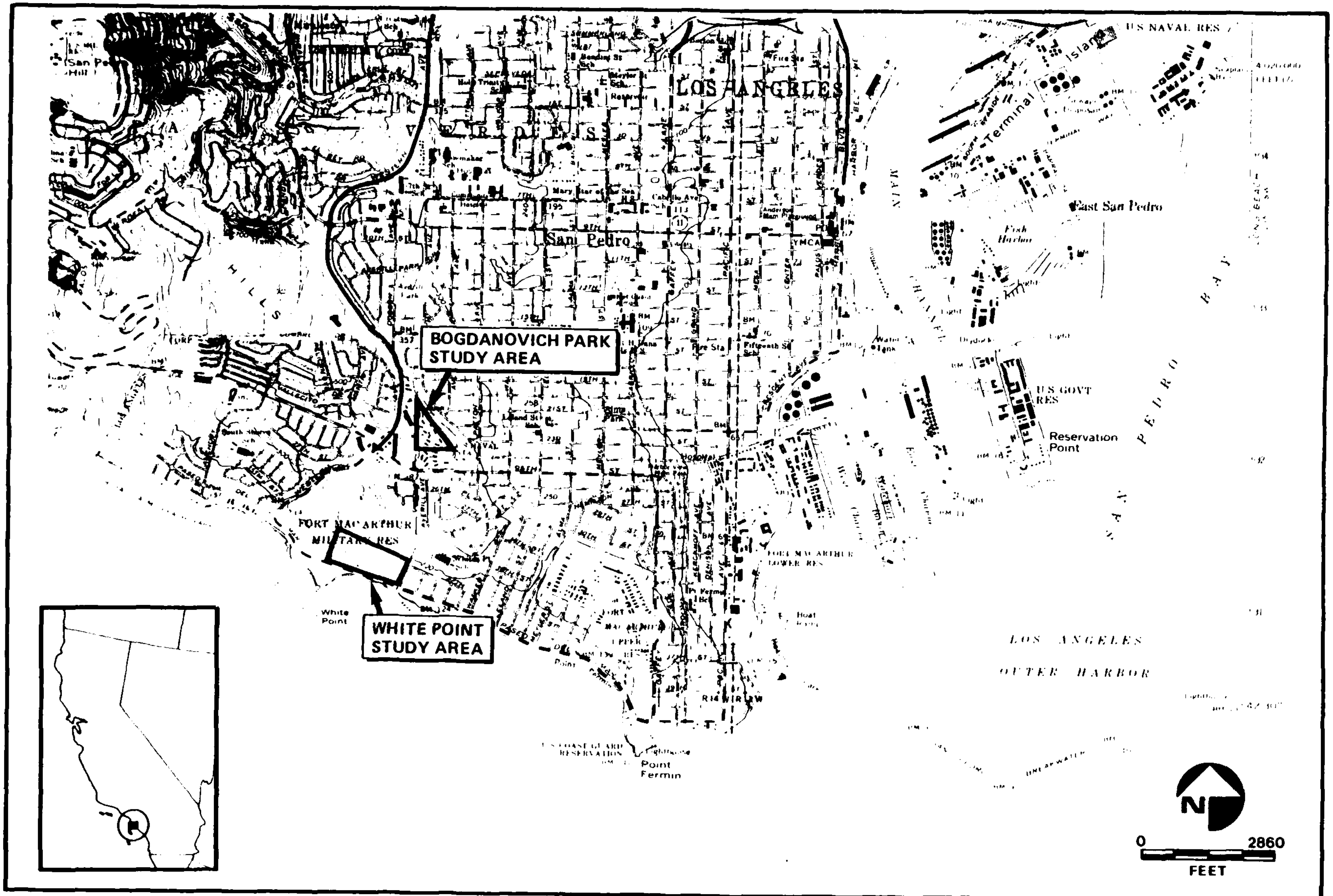
This report describes and evaluates the results of archaeological test excavations conducted at two locations on the Palos Verdes Peninsula in the City of Los Angeles, California. An evaluation of paleontological resources at both locations, along with a description of sedimentary strata underlying the cultural deposits, is presented in Appendix A. These investigations were performed by WESTEC Services, Inc. (WESTEC), San Diego, California, under contract to the United States Army Corps of Engineers, Los Angeles District. Preliminary assessment and fieldwork phases of the archaeological study were completed during September, October, and November 1985, and included: (1) a cultural resource records and literature search; (2) subsurface test excavations at three previously recorded archaeological sites located on project properties (CA-LAn-105, -291, and -1269); and (3) archaeological monitoring of geological tests (auger borings) carried out for the United States Air Force by Woodward-Clyde Consultants, San Francisco, California.

Of concern here are two locations the Air Force is considering for construction of residential housing to accommodate Space Division personnel: Bogdanovich Park, located north of 25th Street and east of Western Avenue; and a 30-acre parcel located northwest of the intersection of Weymouth Drive and Paseo Del Mar and roughly 400 m northeast of White Point, a coastal promontory on the south shore of Palos Verdes Peninsula 1.9 km west of Point Fermin (Figures 1 and 2). The Bogdanovich Park study area lies ca. 1.3 km north-northeast of White Point. As part of a legislated process to review the environmental impacts accompanying such developments, WESTEC was contracted to: (1) identify, locate, and describe cultural resources within the two project areas; (2) determine the depth, integrity, and research value of archaeological deposits at each location; (3) evaluate the significance of these resources with respect to their eligibility for inclusion in the National Register of Historic Places, as defined in 36 CFR 60.4; and (4) recommend measures to mitigate adverse impacts to cultural resources identified as potentially Register-eligible. The investigations were conducted under authority of the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969, as amended; Title 36 CFR 800 "Protection of H[illegible]oric and Cultural Properties;" and Public Law 93-291 "Preservation of Historic and Archaeological Data."

PROJECT SETTING

Physiographically, the project areas are situated on the lower marine terraces along the southwest facing coastline of the Palos Verdes Hills. Because the hills extend out from the coastline, they are also often referred to as the Palos Verdes Peninsula. The peninsula is situated between Santa Monica Bay to the northwest and San Pedro Bay to the southeast. The hills are approximately 15.25 km (9.5 miles) long from the farthest point northwest to the southernmost extent, and between 6.5 and 8.0 km (4 and 5 miles) wide. They reach a maximum elevation of 444 m (1480 feet) approximately 4 km (2.5 miles) northwest of the project area at San Pedro Hill.

Forty kilometers (25 miles) north of the Palos Verdes Hills are the east-west trending Santa Monica Mountains, which reach a maximum elevation of 949 m (3111 feet). To the northeast, east, and southeast is the broad, relatively flat, central plain of the Los Angeles Basin. The three major drainages of the basin, the Los Angeles, San Gabriel, and Santa Ana rivers, all flow across the plain to the coast and empty into the



San Pedro Quadrangle 7.5 Minute Series- 1964 Photo Revised 1972

FIGURE 1

WESTEC Services, Inc.

Aerial Photo of White Point 1970

FIGURE 2

Pacific Ocean southeast of the peninsula. This plain extends east approximately 40 km (25 miles) to the Repetto and Puente hills, and 80 km (50 miles) southeast and south to the Santa Ana Mountains and San Joaquin Hills.

The climate of the peninsula is Mediterranean with cool, moist winters and hot, dry summers. High fogs, which occur during the summer months, tend to ameliorate the summer heat. The mean annual rainfall is about 27 cm (10.5 inches) with a higher relative humidity than the adjacent mainland coastal area, mostly as a result of being surrounded on three sides by the Pacific Ocean. The relative humidity at Point Vicente, for example, averages 71 percent, while in Los Angeles it averages 51 percent. The average yearly temperature in the hills is approximately 67 degrees (Woodring et al. 1946:8-9).

In general, the native vegetation prior to modern disturbance consisted of plants of the Coastal Sage Scrub community. Present also, to a lesser degree, were patches of the Grassland and the Lower Chaparral communities. The Riparian Plant community was represented near springs and lining the lower areas of some of the more well-watered canyons. Areas of the Salt and Freshwater Marsh Plant communities were present to the south and west around the San Pedro Bay estuary, and areas of the Riparian and Oak Woodland communities were present to the north and east along the Los Angeles and San Gabriel rivers, as well as elsewhere in the greater basin area (Bates 1963:9-13; Munz 1974). According to Bates (1963:12, 23), large trees, such as oaks, were absent on the peninsula by as early as 1835, and, because of the soil and climatic conditions, may not have been present in any quantity in the hills even during late prehistoric times.

The native fauna in the project area includes (or included prehistorically) land mammals such as mule deer (Odocoileus hemionus), grizzly bear (Ursus horribilis), coyote (Canis latrans), gray fox (Urocyon cinereoargenteus), raccoon (Procyon lotor), badger (Taxidea taxus), striped skunk (Mephitis mephitis), spotted skunk (Spilogale putoris), desert cottontail rabbit (Sylvilagus audubonii), blacktail jackrabbit (Lepus californicus), brush rabbit (Sylvilagus bachmani), California ground squirrel (Spermophilis beecheyi), valley pocket gopher (Thomomys bottae), and several species of rats and mice (families Heteromyida and Cricidae).

Sea mammals in the vicinity include or included the California sea lion (Zalophus californianus), harbor seal (Phoca vitulina), and several species of dolphins and porpoises (Family Delphinedae) and whales (Order Cetacea) (Bates 1963:16; Burt and Grossenheider 1976). Also present was the sea otter (Enhydra lutris) (Bates 1963:15-16; Burt and Grossenheider 1976).

Reptiles and amphibians in the area include or included the western toad (Bufo boreas), Pacific rattlesnake (Croatalus viridis), Pacific gopher snake (Pituophis melanolencuscantenifer), western pond turtle (Clemmys marmorata), foothill alligator lizard (Gerrohonotus multcarinatus), and western fence lizard (Sceloporus occidentalis) (Stebbins 1966; Gales 1974). A large number of species of avifauna are present in the hills due to the overlap of ocean and land habitats (Peterson 1961; Gales 1974).

The immediate coastal shoreline habitat of Palos Verdes consists predominantly of what is termed the rocky shore marine environment (Reish 1972). According to Reish, "The Palos Verdes Peninsula is the most extensive rocky shore area of Los Angeles County" (1972:5). This rocky shore habitat, which is bordered by cliffs in many areas, consists of five distinct intertidal zones: the splash zone, the high tide zone, the mid-tide zone, the low tide zone, and the minus tide zone (Reish 1972:10-12). Prominent marine fauna which inhabit these intertidal habitats are the California mussel (Mytilus californianus), the bay mussel (Mytilus edulis), the owl limpet (Lottia gigantea), the black abalone (Haliotis cracherodii), the black turban (Tegula funebralis), the speckled turban (Tegula gallina), and barnacles such as Balanus tintinnabulum, Balanus glandula, and Pollicipes polymerus (formerly Mitella) (Reish 1972; Newman 1975).

The below-tide-level habitats begin beyond the immediate shoreline of the rocky coast. Generally, these are differentiated by the increasing depth of the water. Just offshore are the shallow rocks, and followed by the kelp beds. Beyond these are the shallow reef, the deep reef, and the offshore banks (Young 1975). Prominent fauna of the shallow rocks and kelp bed habitats are the queenfish (Seriphus politus), the Pacific mackerel (Scomber japonicus), surfperches (Family Embiotocidae), the California sheephead (Pimelometopon pulchrum), the white seabass (Cynoscion nobilis), and rock fish (Sebastes sp.) (Young 1975). Nearly all of the non-mammal marine vertebrate food remains recovered at the archaeological sites tested during this study came from these two marine habitats.

Geological Setting

Geologically, the Palos Verdes Hills consist predominantly of Middle and Upper Miocene aged marine sedimentary rock strata. Collectively, these strata have been grouped together by geologists and designated as the Monterey Formation. This formation rests upon a much older formation with no known base. This older formation, which still has not been assigned a definite age by geologists, consists of highly metamorphosed rocks, mostly schist. Geologists also do not agree as to the single formation designation for these basement rocks. Tentatively, they have been associated in age with two nearby formations: the Franciscan Formation (Woodford 1924) and the Catalina Schist Formation (Woodring et al. 1946; Schoellhamer and Woodford 1951), both of which are thought to be Mesozoic in age.

The oldest strata of the Monterey Formation in the Palos Verdes Hills area, sometimes labeled the Altamira Shale Member, consists of silty, sandy, and silicious shale with minor amounts of schist breccia and tuff as well as several thick sills of intrusive basalt (Woodring et al. 1946:16). The middle and upper parts, labeled the Valmonte Diatomite and the Malaga Mudstone members, respectively, consist of organic siliceous shale, silty shale, chert, limestone, diatomite, phosphatic shale, tuff, and mudstone (Woodring et al. 1946:11-15).

Because little or no deposition occurred in the Palos Verdes Hills area in the period immediately following the Miocene epoch (i.e., in Pliocene times), when the hills were probably exposed as an island, no rock units are present in the hills from this time period, except for a small area (the Repetto Formation) along the very northern-most margin. In early Pleistocene times when submergence of the peninsula occurred again, rock units of marl, silt, and sand were deposited. These rock units have been given several different designations including the Lomita Marl, Timms Point Silt, and San Pedro Sand formations (Woodring et al. 1946:12). Emergence in middle Pleistocene times again halted deposition and rock unit formation. Sometime toward the end of the middle Pleistocene, increasing upward movement along a newly formed fault began to create 13 marine cut terraces. Today, these terraces, which are still readily visible, range in altitude from 396 m (1300 feet) for the oldest and highest, to 30 m (100 feet) for the youngest. The latter was formed approximately 30,000 years ago (Yerkes et al. 1965:20). Following the cutting of this lowest terrace, successive lowerings of sea level caused local rivers to erode deep channels in the coastal plain. Subsequent increases in sea level in the last 15,000 years have inundated these gaps to form first bays, and, with continued siltation, estuaries and marshes. One such bay-estuary-marsh, probably originally created by the ancestral San Gabriel and Los Angeles rivers, existed prehistorically at what is now San Pedro Harbor.

Submergence and then re-exposure during the late Pleistocene caused the accumulation of layers of marine deposits such as fossiliferous coarse-grained sands and gravels and layers of locally derived (from the hills) non-marine rubble, gravels, and sand. These late Pleistocene terrace deposits constitute the last rock units to be formed in the hills area (Yerkes et al. 1965:40-45; Woodring et al. 1946:12).

The soils of the hills vary according to the basal rock from which they were derived. The lower portion of the Monterey Formation produces a generally brownish soil containing numerous stones composed of hard, cherty shale and, usually, larger pieces of limestone. The upper part produces a dark gray to black adobe soil with generally fewer stones. The intrusive basalt produces a reddish brown soil. The terrace cover soils, which are non-residual (i.e., not derived from the basal rock), are also reddish brown, but are more sandy than the basaltic soil (Woodring et al. 1946:9).

ETHNOGRAPHIC CONTEXT

The Palos Verdes Peninsula lies within the territory ascribed historically to the Gabrielino; hunter-gatherers who occupied a vast region stretching from the Transverse and Peninsular mountain ranges to the central coast of southern California, including the islands of San Clemente, San Nicholas, and Santa Catalina (Bean and Smith 1978:538, Figure 1). In contrast to the substantial ethnographic and ethnohistoric data available for many other native California groups, comparably extensive information on the Gabrielino is lacking. Long before systematic ethnographic studies were initiated in the early 1900s, most of the Gabrielino population was decimated by disease and warfare accompanying missionization and Euroamerican settlement. Surviving accounts suggest that the Gabrielino were comprised of 50 to 100 politically, economically, and socially autonomous groups (or tribelets) each centralized around a single, usually large village (or rancheria) containing, on the average, 50 to 100 residents (Bean and Smith 1978:540; Cottrell et al. 1985:7). Although there were internal dialect differences among the Gabrielino (cf. Kroeber 1925; Harrington 1962; LaLone 1980), in part a function of geography and interaction of peripheral groups with outlying non-Gabrielino populations, the general Gabrielino language is classified in the Cupan language group which, together with the Serrano group, form the Takic language family of the Uto-Aztecan linguistic stock (Bright 1975; Shipley 1978). The appellation "Gabrielino" refers to the Spanish mission (San Gabriel) under whose jurisdiction these people fell, and does not constitute a native tribal designation.

Gabrielino territory encompassed several biotic zones that collectively provided a wide variety of subsistence resources to these indigenous hunter-gatherers. Mountain and foothill resources included large and small game, acorns, pine nuts, and sage, while game (primarily small mammals), acorns, sage, yucca, cacti, and assorted marsh-related plants and animals were available on adjacent prairies (Hudson 1971). Depending upon the locality, coastal resources included various shellfish species, tuna and swordfish (gathered from offshore kelp beds), and marine mammals (Hudson 1971). Coupled with the warm, subtropical climate of coastal southern California, the rich resource base of the general Gabrielino region promoted the growth of a relatively dense and complexly organized hunter-gatherer population.

Archaeological data, as well as the more limited ethnographic record, suggest that Gabrielino settlement strategies revolved around a permanently occupied central village, and seasonally occupied, resource-specific procurement camps (Hudson 1969). Villages controlled surrounding territories, which usually contained several diverse habitats, the exploitation of which supplied the greater bulk of annual subsistence needs (Hudson 1971; Cottrell et al. 1985; Hill 1985). Each village consisted of a number of nonlocalized lineages and the village "chief" was most often the leader of the dominant lineage (Bean and Smith 1978:544). In some instances, a chief might govern over several allied villages. In general, individual families or small, multiple-family groups occupied seasonal procurement camps.

Armed confrontations were apparently not uncommon between neighboring Gabrielino groups and between Gabrielino and surrounding groups; however, for the most part, inter-group and inter-regional relations were amicable and there were extensive and far-reaching economic and sociocultural networks. In terms of exchange, for example, Gabrielino traded steatite, shells, dried fish, sea otter pelts, and possibly salt to populations further inland in return for acorns, seeds, deerskins, and obsidian (Bean and Smith 1978:547). When direct barter transactions were not possible, strings of Olivella shell beads were employed as currency (Ruby 1970).

Along the exposed coast south of San Pedro, villages tended to be situated in more inland settings with only procurement camps located on the coast (Hudson 1971:65). Sheltered coastal areas north of San Pedro to the mouth of Topanga Canyon permitted immediate oceanside village locations (Hudson 1969, 1971). There are several accounts of Gabrielino village names and locations in the general White Point/Bogdanovich Park project vicinity. Bean and Smith (1978:544) noted that "at San Pedro the largest village, sua'na 'place of the skies', was the politial center for a cluster of other villages located nearby and its chief was the political leader for these associated villages." Gillingham (1983) located the dominant local group at sua'ng-na, near Wilmington. Kroeber (1925:Plate 57) reported two Gabrielino villages in the San Pedro area: masau, which appears to have been located on the coast near White Point, and chowi, a short distance inland and directly north of masau. Based on mission record data compiled in 1919 by S.R. Clemence, Bates (1963) located tovemungna (possibly a variant spelling of masau) on the San Pedro headlands and chowi in the hills above San Pedro.

Gabrielino material culture was characterized by a diversified assemblage of highly-crafted utilitarian tools, ornaments, and ceremonially and monetarily valuable objects. Commonly identified with the Gabrielino are a wide range of artifacts fashioned from steatite (e.g., cooking utensils and containers, serving vessels, animal carvings, pipes, etc.). Unmodified nodules, roughly-hewn blanks, or finished artifacts of steatite were obtained by mainland groups from Gabrielino occupying Santa Catalina Island, the principal steatite source in the region and evidently the center of a long-thriving steatite industry (cf. Wlodarski 1979). In addition to a variety of modified lithic items (e.g., chert projectile points, bifaces, unifaces, drills, simple flake scrapers), and bone and shell items (e.g., awls, fishhooks, needles, flakers, scrapers), the Gabrielino tool assemblage included bedrock and portable mortars, metates and manos, coiled and paddle-and-anvil ceramic vessels, and coiled (e.g., mortar hopper, winnowing) and twined (e.g., gathering) baskets (Blackburn 1963). Lashed plank canoes sealed with asphalt were used in offshore fishing and island trading expeditions (Bean and Smith 1978:546). Gabrielino structures included domed, thatched houses (some large enough to hold several families), earth-covered sweathouses, menstrual huts, and the yuva'r, a large, un-roofed ceremonial enclosure, constructed of willow boughs and stakes, associated with formalized activities related to the Chingichngish cult (Bean and Smith 1978:542). As one of the two major religious subsystems that developed out of the jimsonweed or toloache religion in coastal California (the other being the Chumash ʔantap) by the time of Spanish contact (and perhaps in a "crisis cult" reaction to its mortal effects on native societies), the Chingichngish cult had apparently spread from its supposed origin at Pubunga (in Gabrielino territory near Long Beach) to neighboring Luiseño, Ipai-Tipai, Cupeño, and Juaneño populations (Bean 1978:667-669; Bean and Smith 1978:548).

PREHISTORIC CONTEXT

Archaeological research in coastal southern California over the past half-century suggests a complex prehistoric record of initial human settlement and subsequent episodes of demographic change, technological innovation, and sociocultural evolution spanning more than six millennia. In general, the record seems to indicate increasingly diversified and intensified cultural activities over time and space as evidenced by long-term trends toward population growth, greater sedentism, technoeconomic specialization, and increased sociopolitical complexity (Wallace 1955, 1978; Meighan 1959; Warren 1968; Hill 1985).

There remain, however, outstanding theoretical and historical questions about the development of prehistoric cultural systems in the region, as well as significant deficiencies in the extant archaeological data bank and approaches to its methodological manipulation. Notable among the former are: (1) the ecological systematics of adaptive strategies during discrete temporal periods; (2) the factors underlying apparent intervals of population growth, stability, and/or decline; (3) the direct and indirect effects of Holocene environmental changes on local and regional populations, including their role in influencing the relationships between coastal and interior populations; and (4) the evolutionary significance of economic, political, and social networks, either in stimulating culture change or in preserving cultural continuity. Among the major data debts for the region are: (1) well-defined faunal and floral assemblages useful for the reconstruction of dietary regimes on a diachronic basis; (2) identification of the extractive, manufacturing, and use components of particular tool technologies, including delineation of resource-specific procurement tool-kits; (3) well-controlled chronological ordering of key artifact categories and tool assemblages; and (4) elucidation of diagnostic archaeological traits characterizing discrete sociolinguistic and/or ethnic groups. There are also critical, but often unstated methodological issues. Among these is the need for research strategies that can distinguish period-specific patterns despite frequently temporally mixed assemblages and cultural deposits. A second methodological problem worthy of mention relates to the linkage, rarely made explicit, of archaeological data to the theoretical and historical models used to explain them.

Two synthetic reconstructions of regional cultural history dominate the archaeological literature on coastal southern California. The initial sequence, proposed by Wallace (1955) as a primarily classificatory device, consists of four broad horizons: Early Man (I), Milling Stone Assemblages (II), Intermediate Cultures (III), and Late Prehistoric Cultures (IV). More recently, Warren (1968) proposed an alternative sequence comprised of "cultural traditions" taken to represent distinctive systems of adaptation: San Dieguito, Encinitas, Campbell, and Shoshonean (central coast)/Yuman (south coast). Warren (1968:12) considered the Chumash culture of north coastal southern California as an historic expression of the Campbell Tradition.

Although the two reconstructions were each formulated with different objectives in mind, both employ many of the same archaeological indicators (i.e., material traits) to distinguish among the respective horizons and traditions (Koerper and Drover 1983; Cottrell et al. 1985). For example, the appearance of the mortar-and-pestle is associated with both the Intermediate Culture Horizon (Wallace 1955:221) and the Campbell Tradition (Warren 1968:2). Consequently, in a relative sense, the two chronologies are quite comparable and absolute calendric differences can probably be attributed to the absence of radiometric dates at the time Wallace (1955) developed his sequence. What is apparent, however, is that aside from providing a gross, and still largely undemonstrated (cf. Cottrell et al. 1985:15-16) chronological ordering of certain archaeological materials in the general region, neither scheme can serve as a viable framework within which to explore diachronic processes of cultural evolution in prehistoric coastal southern California. This observation, and the general concerns noted above, are not in any way meant as a condemnation of previous work, they merely reflect an ongoing process of problem definition, experimental design and execution, and, ideally, problem resolution that will lead to a better understanding of the prehistoric record and reveal promising avenues for future research. The present study, being of a strictly preliminary nature, attempts to assess the potential of the White Point/Bogdanovich Park archaeological resources to yield information valuable to this process.

PROJECT PROPERTIES AND PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

The project properties are located on the USGS San Pedro Quadrangle, 7.5 minute series topographic map (photo revised 1981). Archaeological records for this quadrangle are archived at the Archaeological Survey Office, University of California, Los Angeles (UCLA). Previously recorded site locations were plotted on the project map and pertinent site records and reports copied for reference. Portions of two of these sites, CA-LAn-105 and -291 are located within Bogdanovich Park. The White Point parcel contains one previously identified archaeological site area that was referenced as Eberhart-9 (Weil and Weisbord 1984:28). This site has been recorded at UCLA and assigned site number CA-LAn-1269. Within two miles of the study area are an additional eight recorded archaeological sites. CA-LAn-283, the San Pedro Harbor site studied and reported on by Butler (1974), is a little over two miles northeast of White Point. Table 1 summarizes the history of local archaeological research.

Bogdanovich Park

Bogdanovich Park is situated east of Western Avenue and extends north from 25th Street toward 19th Street. The project parcel encompasses approximately 22 acres. The southern third of the parcel was graded to depths of up to 15 feet below the natural contour during construction of two athletic fields in 1978. The middle third of the property was formerly used for naval housing but the buildings were removed in the 1970s. A driveway and two parking areas remain.

Table 1

SUMMARY OF PREVIOUS ARCHAEOLOGICAL WORK

Site	Date Recorded	Previous Designation	Person/ Organization	Shell	Bone	Historic	Artifacts	Site Area/Comments	Reference
LAn-105	1939	#19	F.H. Racer				mortar, pestle		Racer 1939
	1980		M. Boxt	abalone, clam, oyster, mussel			chert core, debitage		Boxt 1980
	1982		S. Colby	abalone			chert flake		Colby 1982
LAn-142	1912		N.C. Nelson	abalone	present		stone (4)	50 x 100 feet. Two deposits either side of creek. Refuse heap.	Weil and Wrisbord 1984 Site Records - UCLA
	1974		Eberhart	none noted	none noted		none noted	75 feet N-S, 100 feet E-W. Undisturbed deposit.	Weil and Wrisbord 1984
	1975		Clewlow	Olivella			1 piece of chert	Undisturbed.	Walsh and Botkin 1983
	1984		Applied Conservation Technology (ACT)				chipped stone artifacts	Larger than above.	Weil and Weisbord 1984
LAn-143	1912		N.C. Nelson	present			obsidian quartz	Campsite, Japanese aba-lone site.	Weil and Weisbord 1984 Site Records - UCLA
	1974		Eberhart	present				1,200 feet EW, 400 feet NS.	Weil and Weisbord 1984

Table 1

SUMMARY OF PREVIOUS ARCHAEOLOGICAL WORK (Continued)

Site	Date Recorded	Previous Designation	Person/ Organization	Shell	Bone	Historic	Artifacts	Site Area/Comments	References
LAn-1144	1984		ACT	Chione, Haliotis, Mytilus			lithic scatter, chert, chalcedony, fused shale	110 x 2200 m. Second and third terrace, ridgeline parallel to Western Avenue.	Weil and Weisbord 1984
Eberhart-5	1974		Eberhart	present				1,200 feet EW, 400 feet NS.	Weil and Weisbord 1984
Eberhart-9	1974		Eberhart	present				600 feet EW, 50 feet NS. Perhaps two temporary camps.	Weil and Weisbord 1984

Table 1

SUMMARY OF PREVIOUS ARCHAEOLOGICAL WORK (Continued)

Site	Date Recorded	Previous Designation	Person/ Organization	Shell	Bone	Historic	Artifacts	Site Area/Comments	Reference
	1975		Clewlow	abalone, mussel, scallop				Disturbed.	Walsh and Bolkin 1983
LAn-152	1912		N.C. Nelson	present				50 x 100 feet. Refuse heap aross from LAn-142.	Weil and Weisbord 1984
	1974		Eberhart	present		fish pond, old house, debris		75 feet EW, 50 feet NW. Disturbed.	Weil and Weisbord 1984
	1975		Clewlow	abalone, mussel, scallop				Disturbed.	Walsh and Botkin 1983
	1984		ACT			ceramic, glass, metal, concrete	chipped and ground stone	Remains of farmhouse, maybe NW extension of LAn-143.	Weil and Weisbord 1984
LAn-291	1960	PV 30, San Pedro 1	D.L. True	present			blades, scrapers, steatite fragments, steatite whale effigies, 11 points	2 acres, village.	Weil and Wrisbord 1984 Site Records - UCLA

According to the site locations recorded at UCLA, portions of CA-LAn-105 extend into the parcel from the east and portions of CA-LAn-291 extend into the parcel from the northwest. It is apparent, however, that construction of a high school, convent, and nursing facility west of the project area, and the athletic fields within the parcel has severely impacted portions of both archaeological sites. Also, it seems possible that CA-LAn-105 and -291 (as well as, perhaps, CA-LAn-109 [see below]) represent different loci within a single, large site complex. That these loci are recorded as separate sites may simply be a result of modern land modifications which interrupt an otherwise continuous archaeological deposit. For the sake of continuity, however, the original site designations are retained in the present report.

CA-LAn-105 was first mentioned as Site 19 in F. Racer's notes in "Camp Sites in Harbor District" (1939). Racer (1939:7) stated, "A large mortar and pestle were plowed out by a Japanese gardener". Site 19 was eventually recorded as CA-LAn-105 and, in 1980, the records were updated by Matthew Boxt. Boxt (1980) reported the presence of a chert core, chert flakes, a sandstone mano, and the remains of several varieties of shellfish. By 1980, however, the site had sustained major damage from construction of a paved road, parking lots, and a baseball field. In addition, the surface had been graded, plowed, and filled. "The northern portion of the property, however, remains relatively undisturbed" (Boxt 1980:5). In 1982 another survey was conducted on part of the site area (Colby 1982) and the presence of archaeological materials confirmed. Again, it was noted that construction of the hilltop baseball diamond had almost completely destroyed CA-LAn-105. A personal conversation with Dr. Peter Schroeder, minister of the Good Shepherd Lutheran Church occupying property immediately east of the parcel, revealed that a few prehistoric items had been found in this area, including a small pestle.

CA-LAn-291 was previously designated as San Pedro-1 and may have been one of the sites described by Racer. D.L. True updated the site survey record form in 1960 and described CA-LAn-291 as an important site area, possibly a village, of which a small portion may remain. Bifaces, scrapers, worked steatite fragments, and a steatite whale effigy were reportedly found, but by whom and where the artifacts were taken is not specified on the survey record.

During the course of the present fieldwork, local residents reported that an archaeological excavation had been undertaken during construction of the condominiums northwest of Bogdanovich Park. A copy of the report of this excavation was obtained from Ancient Enterprises, Inc., a private cultural resources consulting firm in Los Angeles. The site excavated was CA-LAn-109, or rather the small remaining portion of it left after construction of a home in the 1950s removed all but a raised flower bed measuring approximately 2 x 22 m. Several chipped stone artifacts were recovered, including a biface and probable drill. A hammerstone, chopper, cores, steatite bowl fragments, ground stone tool fragments, seven beads, asphaltum, and shaped stone and shell were also recovered. Based on bead types, an initial occupation perhaps as early as 400 B.C. was estimated (Walsh and Botkin 1983:16).

White Point

The White Point project area covers approximately 30 acres located in the southeast corner of a large, undeveloped parcel which extends from Western Avenue to Weymouth, and from Paseo del Mar to the top of the bluffs. The historical record documents use of the White Point area as an abalone processing area, hot springs resort, and military reservation. Evidence of these uses exists today as remains of a Nike missile base, military buildings, concrete bunkers, kennel facilities, non-indiginous trees, and a fountain.

One previously recorded archaeological site is located within the parcel. Recorded as Site-9 by Hal Eberhart in 1974, the site was described as consisting of a light scatter of shellfish remains, with slightly heavier concentrations in certain restricted areas (Weil and Weisbord 1984). This site was assigned site number CA-LAn-1269 at UCLA.

Outside the project area, but within the Ft. MacArthur - White Point Reservation, are four recorded sites: CA-LAn-142, -143, -152, and -1144. Site 5, described in Eberhart's survey as a scatter of shellfish on the upper marine terrace northwest of Site 9 (CA-LAn-1269), was not officially recorded. CA-LAn-143 lies south of the study area on White Point. N.C. Nelson had recorded CA-LAn-142, -143, and -152 some years before and described them as scatters of shell with a few artifacts. The records were updated by Eberhart during his 1974 reconnaissance and site locations confirmed, but little new information was provided. In connection with proposed development of the property for a park facility, field surveys were conducted in 1975 by William Clewlow and again in 1984 by Applied Conservation Technology (ACT). The ACT survey resulted in an additional archaeological site being recorded (CA-LAn-1144). It is described as a "shell and lithic scatter concentrated along relatively flat portions of the [marine] terraces" (Weil and Weisbord 1984:1-3). Chert, chalcedony, and fused shale chipped stone debitage were noted. Shell genera included Chione, Haliotis, and Mytilus. The White Point Feasibility Study, produced in July 1984, by James D. Heiner for William S. Briner, Director of the Los Angeles County Department of Parks and Recreation, discussed the area's natural resources and proposed development but does not provide any new archaeological information.

FIELD AND LABORATORY METHODS

FIELD METHODS

Field methods in the two study areas, White Point and Bogdanovich Park, were essentially the same except for a difference in the total number of archaeological test excavation units. The purpose of the testing was to evaluate the vertical and horizontal limits and integrity of the cultural deposits in order to determine their eligibility for inclusion in the National Register of Historic Places. Field procedures were designed to maximize the recovery of information pertinent to this question.

Monitoring of Geological Tests

Field work began with the monitoring of auger borings conducted for geological assessment by Woodward-Clyde Consultants. Twenty-five bore samples were taken at White Point, and 17 at Bogdanovich Park. The depth of the surficial, dark gray-brown soil stratum (see Appendix A) most likely to contain cultural remains (cf. Cooley 1982) was recorded and samples were screened and examined for archaeological materials. Sample locations were noted on field maps and soil characteristics recorded for each test unit. Concurrent with auger monitoring, systematic surveys of both project areas were conducted. This was accomplished by pedestrian surface examination of the area surrounding each bore sample test unit, at approximate 5 m east-west transect intervals for a distance of at least 50 m in all directions. Considering the proximity of the test units to one another, this approach allowed for some overlapping coverage and effectively covered the entire surface of both project areas. During the survey, a steatite pendant fragment was collected at White Point, and a pestle and small portable mortar were collected at Bogdanovich Park. Artifact proveniences were marked and recorded with the use of a transit. The artifacts were collected because of their diagnostic nature and for protection from possible loss to relic hunters or destruction as a result of current land-use activities.

Since the sedimentary strata underlying the dark gray-brown cultural soil predate human presence in the area (based on current information), it seems fairly certain that archaeological remains will not be found in these strata and they are here regarded as culturally sterile. This, of course, does not preclude the possibility that their stratigraphic integrity has been violated and cultural materials introduced by rodent and/or prehistoric human ground-disturbing activities. In general, however, it is the dark gray-brown soil stratum that is the concern of this archaeological study.

Bore Samples

Geological bore samples were obtained by drilling an 8 inch diameter hole and removing soil samples in 5 foot increments to a depth of 20 to 40 feet. As soil was brought to the surface, samples of the dark gray-brown stratum were screened for shell, bone, and lithic debris. Approximate depths of this stratum were recorded. Although drilling at all geological test locations was not monitored, those bore samples that were examined provided useful data on the vertical and horizontal distribution of subsurface cultural remains. These data are summarized in Table 2.

Table 2

BORE SAMPLES

Sample Number	Fill/ Disturbance	Depth* (feet)	Shell	Bone	Debitage	Historic
		WHITE POINT				
1	---	7	---	---	---	---
2	---	4.5	---	---	---	---
3	---	6.5	---	---	---	---
4	---	6	---	---	---	---
5	---	4	---	---	---	---
6	---	0	---	---	---	---
7	---	3	X	---	---	---
8	---	2	---	---	---	---
9	---	6	---	---	---	---
10	---	3	---	---	---	---
11	---	4	---	---	---	---
12	---	7	---	---	---	---
13	---	7	---	---	---	---
14	X	3	X	X	X	---
15	X	4	X	---	---	---
16	X	2	---	---	---	---
17	---	2	X	---	---	---
18	---	6	X	---	---	---
19	---	7	X	---	---	---
20	---	3	X	---	---	---
21	---	4	---	---	---	---
22	---	3	---	---	---	---
23	---	4	---	---	---	---
24	---	2	---	---	---	---
25	---	0.5	---	---	---	---

*Depth refers to the layer of dark gray-brown adobe soil

X = Present

--- = Absent

The shells recovered included Chione, Mytilus, Pecten, Haliotis, and Tegula. Historic materials included glass (recent and historic), asphalt tile fragments, and nails.

Table 2 (continued)

BORE SAMPLES

Sample Number	Fill/ Disturbance	Depth* (feet)	Shell	Bone	Debitage	Historic
		BOGDANOVICH PARK				
1	X	1	---	---	---	---
2	---	1.5	---	---	---	X
3	---	1	---	---	---	---
4	X	4	---	---	---	---
5	---	1	---	---	---	---
6	---	1	X	---	X	---
7	---	1	X	---	X	---
8	---	1	X	---	X	---
9	X	1	X	---	X	---
10	X	0	---	---	---	---
11	---	2	---	---	---	---
12	---	3.5	---	---	---	---
13	---	4	---	---	---	---
14	---	4	X	---	---	---
15	---	3	---	---	---	X
16	X	1	---	---	---	---
17	X	2	X	---	---	---

*Depth refers to the layer of dark-brown adobe soil

X = Present

--- = Absent

The shells recovered included Chione, Mytilus, Pecten, Haliotis, and Tegula. Historic materials included glass (recent and historic), asphalt tile fragments, and nails.

Trenching

The geological testing program conducted by Woodward-Clyde Consultants included backhoe trenching in and around previously defined sensitive archaeological areas. Trenching was monitored by an archaeologist. Eleven trenches were excavated at Bogdanovich Park and five at White Point. Trenches were photographed and stratigraphic information was recorded. The trenches averaged 1 x 2 x 4 m in overall dimensions. No archaeological remains were noted during trench excavation.

Based on observations made in the course of monitoring the geological test excavations, certain stratigraphic patterns became evident. Natural stratigraphy at both project locations is characterized by an upper stratum of loosely consolidated dark brown or gray-brown soil. This stratum is underlain by a compact, consolidated, gray-brown soil, sometimes slightly lighter in color than the overlying soils. The third soil stratum forms a transition zone where soils from the upper two strata are mixed with debris from the weathered diatomaceous bedrock. These stratigraphic relationships (see Appendix A) are consistent with those reported previously by Woodring et al. (1946), Yerkes et al. (1965), and Cooley (1982). Defined below are the terms used to describe soil strata.

Adobe/loam. This soil is dark gray-brown in color and loosely consolidated, with a high adobe content but containing some relatively light-textured loam. The stratum usually displays a high frequency of fine roots and evidence of considerable rodent activity.

Adobe. This stratum consists of dark gray-brown soil with an increased root content. Occasional grains of caliche are present, and the soil has a relatively high clay content and an elastic texture.

Diatomaceous Bedrock Soil. The bedrock soil is light-colored, varying from gray to light tan. It is derived from the weathered diatomaceous bedrock and exhibits sedimentary characteristics (i.e., sandstone, siltstone, mudstone).

Light Brown Loam. Light brown to tan in color, this relatively loose soil has a high sand content and probably represents slope wash deposition.

Archaeological Testing

Following the initial geological investigations, the archaeological testing program was begun at Bogdanovich Park. A datum was established and a 20 m interval true north grid was staked over the study area. A series of shovel test pits (STPs) and 1 x 1 m units were excavated and the soil was screened through 1/8-inch mesh hardware cloth. The STP units, each approximately 40 cm in diameter, were placed at 20 m intervals and excavated in 20 cm levels to bedrock or to a maximum depth of 90 cm. Similar field procedures were used at White Point. Forty-nine STPs were excavated at Bogdanovich Park and 41 at White Point. Three 1 x 1 m units were excavated to bedrock, in arbitrary 10 cm levels, at each location. All units and STPs were backfilled. During STP and unit excavations, all shell, bone, and artifacts were collected and placed in clear plastic bags marked with the appropriate provenience information. Special note was made of intrusive soil and/or historic debris, and other disturbances pertinent to establishing depositional integrity. Items recovered during the field work were taken to the WESTEC laboratory for washing, cataloging, and analysis.

LABORATORY METHODS

Chipped Stone

Chipped stone tools and debitage were examined to determine manufacturing, use, and raw material procurement procedures. Each item was examined with the aid of a 10X hand lens. A binocular microscope (10-30X) was used to examine modified edges.

The category debitage includes all items relating to stone tool manufacture and maintenance, and includes diagnostic flakes and angular waste fragments or shatter. A bulb of percussion or a visible strike point are prerequisites for an item classified as a flake. Lithic debris lacking these diagnostic attributes were grouped together as angular waste fragments. All debitage was subjected to visual examination and subsequently classified by raw material, stage of production, and production technique. In conjunction with the debitage analysis, cores were examined and classified according to the type of reduction process represented. Several pertinent aspects of chipped stone tool manufacture are discussed below.

Core Reduction

Core reduction is defined as the initial shaping and/or thinning of a mass of raw lithic material to serve as a source of flakes for subsequent tool manufacture or for use without further modification. Flakes associated with initial core reduction tend to be large and thick, and often retain portions of cortex. Direct, hard-hammer percussion is the most common reduction technique, although soft-hammer percussion may also be used.

Hard-hammer flakes generally exhibit a well-defined bulb of percussion indicative of the severe, confined contact force (Crabtree 1972). Impact scars on the platform, the presence of fissures or hackles, and pronounced compression rings are also characteristic features of hard-hammer percussion flaking.

Soft-hammer flakes, on the other hand, represent a striking action that is less severe. The use of a soft hammerstone transmits the force of the blow more slowly and less violently. Because the blow is less severe, the resulting flake manifests a more diffused bulb and lipping occurs on the ventral surface of the platform (Crabtree 1972). Other features such as the presence of fissures, hackles, or concentric compression rings are either less prominent or altogether absent.

Biface Reduction/Biface Thinning

Biface reduction or thinning is defined as the process of reducing a mass of raw lithic material by alternating the removal of flakes from around its outer margins (perimeter). This process generally occurs in a series of stages which begin with a roughly flaked biface having a generalized, symmetrical, ovate shape that is eventually worked into a thinner, more finely flaked biface with a lenticular cross-section (Callahan 1977; Cooley 1982).

Hard-hammer techniques are generally used in the early or initial stages of biface manufacture when roughouts or preforms are produced. Hard-hammer biface reduction flakes tend to be thicker and shorter than soft-hammer bifacial reduction flakes, but display few other distinguishing features. Flakes detached during later stages are generally produced by a soft hammer, but some hard-hammer removal is not uncommon. Soft-hammer bifacial thinning flakes tend to be thin and, generally, are wider than they are long (Crabtree 1972:9). Patterned flake scars from earlier reduction stages are often visible on the dorsal surface. The platform frequently has evidence of some type of preparation (e.g., grinding or beveling) that facilitates the detachment process. An obtuse angle is generally present at the point where the platform and ventral surface meet.

Pressure Flaking

This is a controlled finishing technique in which a pointed antler, bone, or piece of hardened wood is pressed against the thin margin of a biface and pressure is exerted both inward and downward in the same motion (Crabtree 1972). This results in a small, thin flake "popping" away from the edge. Although specific applications may vary, the technique always results in a controlled, precise removal of flakes. Pressure flakes are generally small and thin with scarring present on the platform (a result of the force applied). If the flake is exceptionally thin, the scarring may also extend across a portion of the dorsal face.

Retouch Flaking

This technique of flaking is used to make an edge more regular in form by thinning, shaping, or straightening. It can be accomplished with hard- or soft-hammer percussion or pressure (Crabtree 1972) and is often used for sharpening chipped stone tools. Retouch flakes are small in size and tend to have very small platforms. The ventral surface and platform may exhibit other characteristics indicative of the method of removal, whether hard-hammer, soft-hammer, or pressure, the attributes of which are described above.

Heat Treatment

A large portion of the chipped stone material from both project locations appears to have been heated. The prehistoric use of thermal alteration to aid in chipped stone tool manufacturing has been well documented (Hester 1972, 1973; Sharrock 1966). A number of experimental studies have been completed in recent years (Crabtree and Butler 1964; Purdy and Brooks 1971; Purdy 1974, 1975). At a nearby prehistoric site in Palos Verdes, CA-LAn-844, Cooley (1982:141-160) reported the occurrence of heat-treated chipped stone material comparable to that found at CA-LAn-105, -291, and -1269. Characteristics indicative of heat treatment of local chert include pot-lid fracturing, crazing, and crenulation or heat stress fractures, as well as a waxy luster and a subtle change from a yellow to a pinkish, reddish-orange color (Cooley 1982:156-157). Cooley (1982:157) suggested that the tabular structure of much of the local cherty shale is well suited to thermal alteration in that heat causes the layered materials to separate more readily, with the less desirable, granular shaley matrix splitting away and exposing the more silicious cherty material along natural bedding planes. Cooley's (1982) study did not examine in detail the degree to which the workability of the chert, in terms of its conchoidal fracturing properties, is improved by heat treatment.

Chipped Stone Material

Locally abundant Monterey chert was the major raw material used for chipped stone tool production at the project sites. The Monterey Formation has alternating beds of fine-grained homogenous chert usually ranging from 1 to 4 cm in thickness, often interbedded with layers of a softer, less silicious shale or siltstone. This is such a typically local phenomenon that it has been suitably termed "cherty shale" (Cooley 1982) or "silicified diatomite" (Butler 1974). The term cherty shale will be used in this report. While the chert portions of the beds are consistently similar in structure and density, the "shaley" portions vary considerably, ranging from an extremely hard and indurated siltstone, or a highly silicified diatomite (Butler 1974), to a much softer fine-grained siltstone.

It seems that a specific technology was developed in the Palos Verdes area for the use of the more homogeneous inner layers of chert in the production of large bifaces (Cooley 1982). Locally occurring siltstone cobbles and tabular pieces may have served as effective hammerstones.

Faunal Remains

Animal Bone

When possible, skeletal elements recovered during the excavations were assigned to species. Treatment of the bone, as in butchering or burning, was also noted. Skeletal remains too fragmentary for species classification were assigned to one of two size-related categories: small mammal (mouse to hare size) and large mammal (raccoon to deer size). These remains were tabulated by weight.

Shellfish

Shellfish remains were sorted by hand and identified to genera and species where possible. Identifications were based on comparisons with identified laboratory specimens, and on the descriptions and illustrations presented by Cerreto and Foertsch (1985), Morris (1966), McLean (1978), and Reish (1972).

The shell was quantified in two ways in order to make as accurate an appraisal as possible of the actual quantity of shellfish remains present at the site. Fragments were first weighed on an Ohaus electronic scale accurate to 0.1 gm. Whole shells and hinges (or umbos) of the pelecypod types, and the apices or spires of the gastropod types were sorted and counted. This latter procedure is often undertaken to estimate the minimal number of individual (MNI) shellfish present (Smart and Green 1962; Ambrose 1963; Cottrell 1978). There can, however, be problems with this type of approach (see Cooley 1982).

RESEARCH RESULTS

BOGDANOVICH PARK

Portions of two archaeological sites, CA-LAn-105 and -291, occur within the study area at Bogdanovich Park. As discussed earlier, both sites have suffered varying degrees of impact due to farming activities and the construction of athletic fields, naval housing, and roads.

Forty-nine STPs (17 at CA-LAn-105, 32 at CA-LAn-291) were excavated (Figure 3). Soils and cultural materials encountered during excavation of the STPs are summarized in Tables 3 and 4. A single 1 x 1 m unit was excavated at CA-LAn-105, and two were excavated at CA-LAn-291. Locations of the three 1 x 1 m units were arbitrarily selected.

CA-LAn-105

Unit Stratigraphy

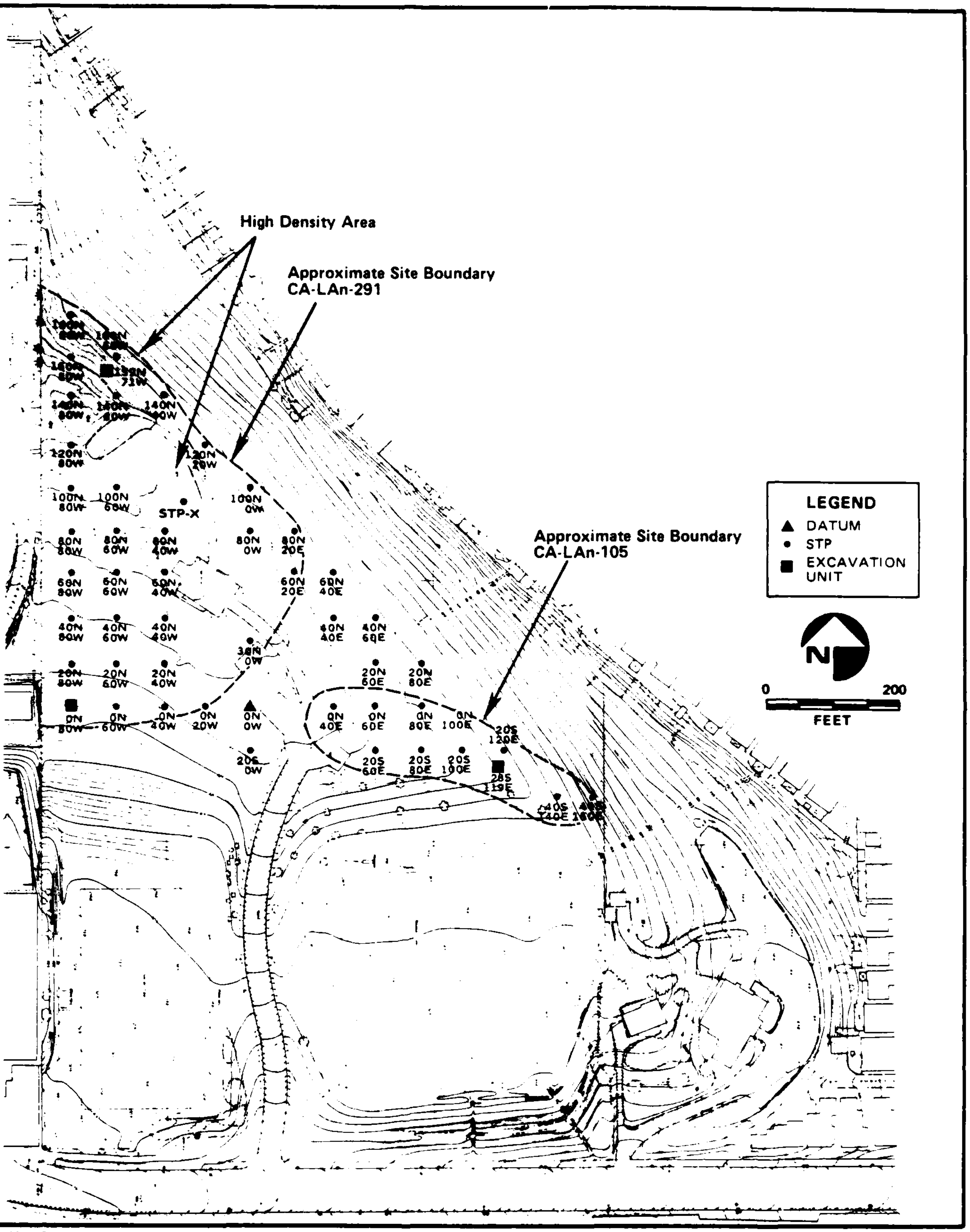
The upper stratum in the 1 x 1 m unit (28S/119E) excavated at CA-LAn-105 consisted of approximately 60 cm of adobe/loam soil (Figure 4). Diatomaceous bedrock was reached at a depth of 50-70 cm. Consolidated adobe and adobe-to-bedrock transition strata were absent. Historic and recent materials, as well as evidence of rodent activity, occurred to a depth of 40 cm. Chert and cherty shale flakes and angular waste were found to bedrock, with most located in the 40-50 cm level. Unit 28S/119E was excavated to a depth of 70 cm.

Chipped Stone

Modified Flakes. A single retouched flake was recovered in the 20-40 cm level of STP 40N/60E. It is a large secondary decortication flake of cherty shale. The flake is tabular in shape and has a band of cortical surface along distal, left lateral margins. A previously struck large flake scar reveals the interior surface on the remainder of the dorsal face. This distal margin exhibits five retouch flake scars, each about 1.3 mm in width and ranging in length from about 0.2 to 0.5 mm. All five retouch flakes were struck from the ventral surface. Some dulling, as exhibited by edge crushing and rounding of the distal margin (edge opposite the bulb of percussion), has occurred but it is unclear if this is the result of use-wear or from natural weathering of this soft, granular material.

Shovel test pit 40S/140E yielded a flake with minimal use. It was recovered from the 20-40 cm level and displays evidence of minute nibbling or scarring along one straight margin. The flake is rectangular and measures 1.8 x 1.6 x 0.4 cm (maximum dimensions) and weighs 0.8 g. No diagnostic features remain except for several partial flake scars visible on one surface. The flake is relatively thin in cross-section and tapers rapidly to the edge where use-wear patterns occur. This flake may have been part of a larger artifact that was fractured or broken. No retouching is present on the flake.

Debitage. Seven unmodified flakes and 23 pieces of chipped stone angular waste were recovered during the test excavation of CA-LAn-105. Notably, three of the flakes and six of the angular waste pieces were found in the 40-50 cm level of the only



Bogdanovich Park - CA-LAn-105, CA-LAn-291

FIGURE
3

Table 3

BOGDANOVICH PARK STP SUMMARY: CA-LAn-105

	Stratigraphy								Cultural Materials			
STP	Fill	Disced	Adobe/ Loam	Adobe	Lt. Brown Loam	Siltstone/ Shale	Caliche	Bedrock Soil	Shell	Bone	Lithic	Historic
20S/0W	-	0-20	-	0-90	-	-	-	90+	-	-	-	0-80
0N/0W												
0N/40E	-	0-20	0-40	40-90	-	-	-	90	0-80	-	20-80	-
20N/40E												
40N/40E	-	0-20	-	0-50	-	-	-	50	-	-	20-40	20-40
20S/60E	0-60	0-20	-	-	-	-	-	60	20-40	-	0-20	0-40
0N/60E	-	0-20	-	0-90	-	15-83	40-83	83	-	-	-	0-40
20N/60E		0-20	-	0-75	-	40-75	-	75	20-60	-	-	0-60
40N/60E	-	0-20	-	0-57	-	-	-	57	0-60	-	20-40	0-60
20S/80E	-	0-20	-	0-75	-	65-75	-	75	0-20	-	0-20	-
0N/80E	-	0-15	-	0-45	-	-	-	45	-	-	-	0-40
20N/80E	-	0-20	-	-	0-50	-	-	49	-	-	0-20	0-20
20S/100E	-	0-20	-	0-80	-	0-	-	80	0-20	20-40	0-60	0-80
0N/100E	-	0-20	0-40	-	-	-	-	60	0	0	0-60	0-60
20S/120E	-	0-20	0-55	-	-	50-55	-	55	-	-	-	0-40
40S/140E	-	0-20	20-40	40-72	-	-	-	72	0-60	-	0-40	0-72
40S/160E	-	0-20	-	0-41	-	35-41	-	41	0-20	-	0-20	0-20

Table 4

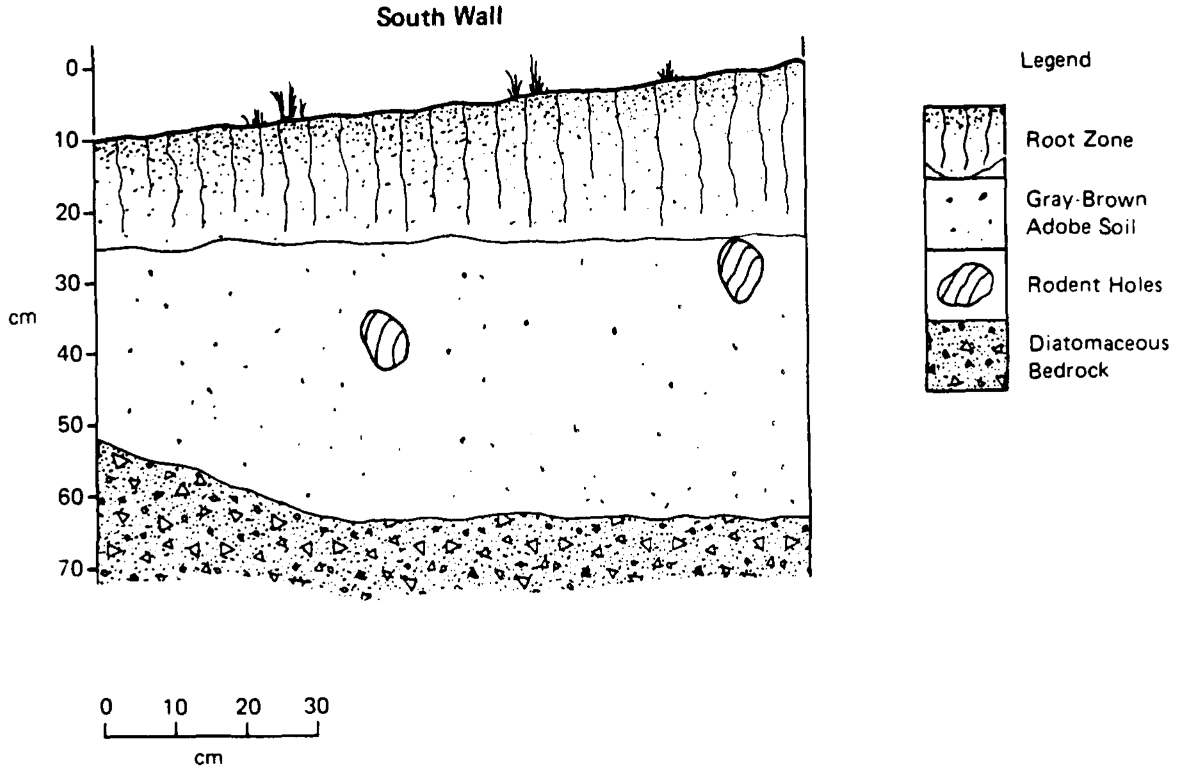
BOGDANOVICH PARK STP SUMMARY: CA-LAn-291

	Stratigraphy								Cultural Materials			
STP	Fill	Disced	Adobe/ Loam	Adobe	Lt. Brown Loam	Siltstone/ Shale	Caliche	Bedrock Soil	Shell	Bone	Lithic	Historic
20N/80W	-	0-20	0-46	-	-	-	-	46	20-40	-	-	-
40N/80W	-	0-20	0-58	-	-	-	-	58	-	-	058	0-20
60N/80W	-	0-20	0-20	20-42	-	-	-	42	-	-	-	0-40
80N/80W	-	0-20	0-20	20-40	-	-	78	90+	20-40	-	0-40	50
100N/80W	-	0-20	0-20	20-70	-	-	-	70	0-60	0-20	-	-
120N/80W	-	0-30	0-30	30-70	-	-	60	80	0-20	-	0-70	0-40
140N/80W	0-40	0-20	-	40-90	-	-	-	90+	40-70	-	-	60
160N/80W	-	0-15	0-60	-	-	-	-	60	0-60	-	0-20	20-60
180N/80W	-	0-15	0-100	-	-	-	-	100	0-100	-	0-80	0-100
0N/60W	-	0-15	0-20	20-80	-			80+	0-60	-	0-40	0-60
20N/60W	-	0-20	0-20	20-90	-	-	-	90+	0-40	-	-	0-90
40N/60W	-	0-20	0-20	20-90	-	-	-	90+	0-90	60-90	-	0-20
60N/60W	-	0-20	0-40	40-80	-	-	-	92	0-60	-	20-60	0-87
80N/60W	0-20	0-20	-	20-60	60-90	-	-	90	-	-	0-80	0-40
100N/60W	0-65	0-20	-	65-80	-	-	-	80+	60-80	-	60-80	0-60
120N/60W												
140N/60W	-	0-10	40-70	10-40	-	-	-	70	0-60	-	0-60	0-60
160N/60W	0-20	0-20	-	20-70	-	-	-	70	40-60	-	20-60	20-40
0N/40W	-	0-20	0-40	40-90	-	-	-	90+	0-90	0-20	20-40	0-60
20N/40W	-	0-20	0-20	20-60	60-90	-	-	90+	0-20	-	0-20	0-90
40N/40W	-	0-20	40-90	20-40	0-20	-	-	90	-	-	-	0-20
60N/40W	0-20	0-20	40-90	20-40	-	-	-	90+	0-20	-	-	0-40

Table 4 (Continued)

BOGDANOVICH PARK STP SUMMARY: CA-LAn-291

	Stratigraphy								Cultural Materials			
STP	Fill	Disced	Adobe/ Loam	Adobe	Lt. Brown Loam	Siltstone/ Shale	Caliche	Bedrock Soil	Shell	Bone	Lithic	Historic
80N/40W	-	0-20	0-20	20-40	-	-	-	90	0-90	0-90	0-90	0-20
140N/40W	-	0-20	40-90	20-40	-	-	-	90	0-90	60-90	0-90	60-90
0N/20W	-	0-20	0-20	20-90	-	-	-		0-20	-	-	0-40
120N/20W	-	0-20	-	20-40	-	40	-	50	0-40	-	0-20	0-20
30N/0W	-	0-20	-	0-80	-	-	-	93	20-93	-	0-80	-
80N/0W	0-60	0-20	-	-	0-60	-	-	60+	-	-	-	-
100N/0W	-	0-20		0-95	-	50-95	-	95	0-40	-	0-60	0-80
60N/20E	-	0-35	-	35-56 60-85	56-60	-	-	85+	0-20	-	40-80	-
80N/20E	-	0-20		0-30	30-60	30-60	-	60	0-20	-	-	20-40
60N/40E	-	0-20	-	0-80	-	-	-	80	-	-	-	0-20



CA-LAn-105 Unit 28S/119E

FIGURE 4

1 x 1 m unit (28S/119E) excavated at the site. Stratigraphic distributions are summarized in Tables 5 and 6 by frequency and weight. Metric attribute data are presented in Appendix B.

It is difficult to conclude much about prehistoric stoneworking at CA-LAn-105 based on such a small sample. Six of the flakes are whole, display the attributes of core reduction flakes (see above), and exhibit dorsal flake scars. Four constitute interior flakes. Flake termination is stepped (4), feathered (2), or hinged (1). Three of the flakes appear to have been struck off heat-treated nodules or cores. Albeit a small sample, these data generally conform to what is expected at archaeological sites in the Palos Verdes Peninsula area (cf. Cooley 1982). The material is of local origin and flake morphology suggests initial core reduction was accomplished elsewhere, probably at a local quarry site. While some effort was made to heat the raw material, flake termination suggests poor knapping success.

Faunal Remains

Animal Bone. Faunal material was found in only one STP (40N/60E) at CA-LAn-105, and consists of a burnt, possibly cut, or sawed large mammal element weighing two grams. Since the specimen was recovered in the 0-20 cm level, it may post-date the prehistoric archaeological deposit. No other evidence was observed that would specifically confirm or deny this hypothesis, although historic debris was found to a depth of 60 cm in STP 40N/60E (Table 3).

Shellfish. The small sample of shellfish remains from CA-LAn-105 prevents making any definitive statement about prehistoric marine resource exploitation patterns. No shellfish were found in the excavation unit, and only 10.6 g of shell fragments were found in the STPs at CA-LAn-105 (Table 7). Haliotis and Mytilus species together comprise 77 percent of the sample by weight, while Tegula, Chione, and a small number of other species constitute 5 percent of the sample. Much of the shell is in poor condition. Eighteen percent of the shell is too fragmented for genus identification and no whole specimens or hinge fragments were recovered. Most of the shellfish debris represent species common to the intertidal zone where they attach to rocks and can be easily collected.

CA-LAn-291

The test excavations at CA-LAn-291 yielded 24 prehistoric tools. Of these, five are groundstone artifacts: one complete portable stone mortar; two stone mortar rim fragments; and two pestles. Also recovered were 13 chipped stone tools, including six biface fragments, two cores, and three use-modified and two retouched flakes. Four hammerstones, a scraper, and a unifacial chopper were also found during the investigation. Although sample size is small, the assemblage suggests that chipped stone tool manufacturing, maintenance, or recycling took place at the site along with some food-processing and domestic activities.

Unit Stratigraphy

Excavation unit 159N/71W was located near the edge of the steep northeast-facing slope at CA-LAn-291 (Figure 3). The unit was excavated to a depth of 40 cm at which point diatomaceous bedrock was encountered. Prehistoric material, mostly chert flakes, angular waste, and fragmented shell, was recovered throughout the deposit with

Table 5

STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE IN UNIT 28S/119E AT CA-LAn-105*

Depth (cm)	Frequency: Flakes	Frequency: Angular Waste	Weight (g) Flakes
0-10	-	-	-
10-20	-	-	-
20-30	-	3	-
30-40	-	2	-
40-50	3	6	4.0
50-60	-	-	-
60-70	-	5	-
Total	3	16	4.0

*Material: chert and cherty shale

Table 6

STP STRATIGRAPHIC DISTRIBUTION OF
FLAKES AND ANGULAR WASTE AT CA-LAn-105*
Frequency (weight [g])

STP	Item	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
0N/40E	Flake	-	-	-	-	-	-
	Angular Waste	-	-	-	1	-	1
0N/80E	Flake	-	-	-	-	-	-
	Angular Waste	1	-	-	-	-	1
0N/100E	Flake	-	-	-	-	-	-
	Angular Waste	1	-	-	-	-	1
40N/40E	Flake	-	-	-	-	-	-
	Angular Waste	-	1	-	-	-	1
20S/60E	Flake	1 (4.3)	-	-	-	-	1 (4.3)
	Angular Waste	-	-	-	-	-	-
20S/80E	Flake	-	-	-	-	-	-
	Angluar Waste	1	-	-	-	-	1
40S/140E	Flake	2 (1.3)	-	-	-	-	2 (1.3)
	Angular Waste	1	1	-	-	-	2
40S/160E	Flake	1 (0.1)	-	-	-	-	1 (0.1)
	Angular Waste	-	-	-	-	-	-

*Material: chert and cherty shale; STPs lacking flakes or angular waste not listed

Table 7

STP STRATIGRAPHIC DISTRIBUTION OF
SHELLFISH REMAINS AT CA-LAn-105*

STP	Genus	Quantity**	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
0N/40E	Haliotis	Frequency	-	-	-	-	-	-
		Weight (g)	5.7	-	-	-	-	5.7
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	0.1	-	0.2
20N/60E	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
20N/80E	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	0.2	-	-	-	-	0.2
40N/60E	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	0.2	-	-	-	-	0.2
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.3	-	-	0.3
20S/60E	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	0.6	-	-	-	0.7
20S/100E	Tegula	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	0.6	-	-	0.6
	Lottia	Frequency	-	-	-	-	-	-
		Weight (g)	0.8	-	-	-	-	0.8
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.5	-	0.1	-	-	0.6
40S/140E	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	0.3	-	-	-	0.6
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
40S/160E	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	0.5	-	-	-	-	0.5

*STPs lacking shellfish not listed

**Frequency given for whole, hinges, and spires only the greatest concentration occurring between the 10 and 30 cm depth. Disturbance to a depth of 30 cm was evident from discing marks and the presence of historic items. The soil was light brown in color, and had a high sand content (Figure 5).

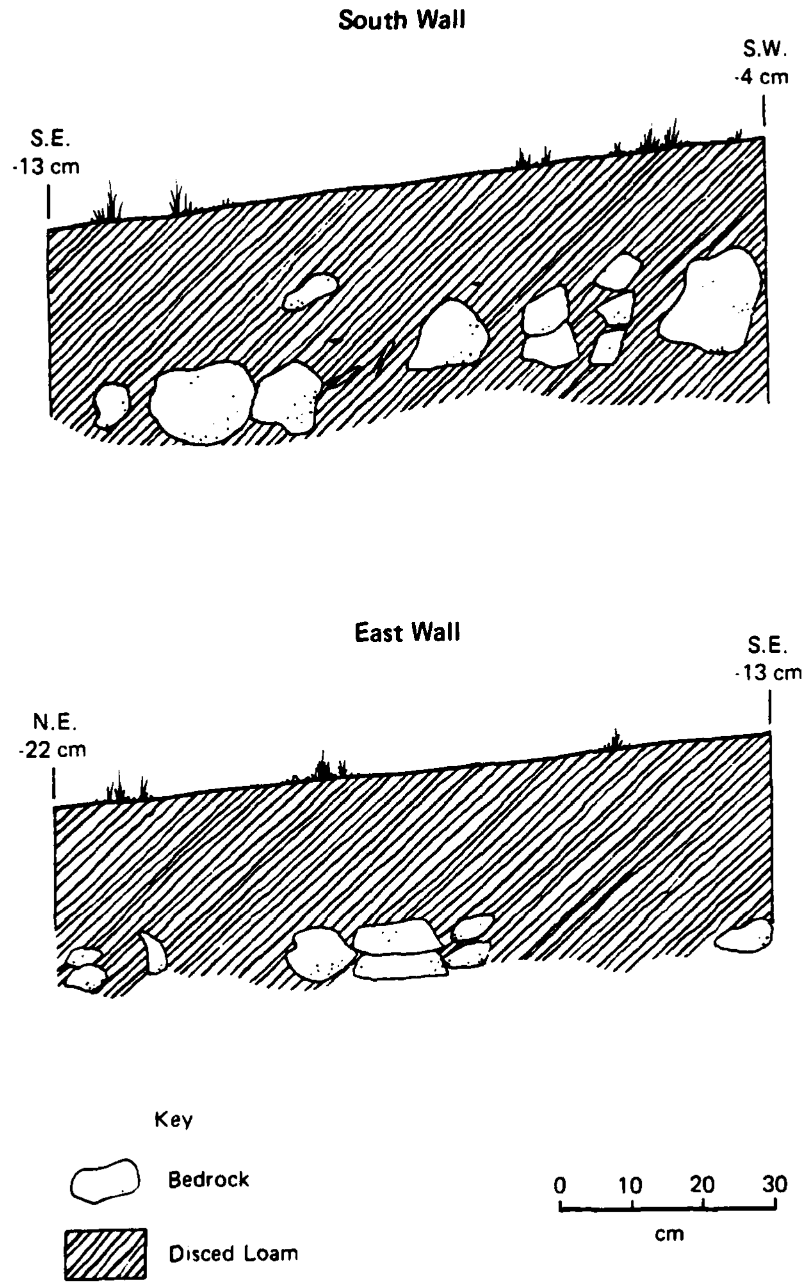
The second 1 x 1 m unit (0N/80W) at CA-LAn-291 was placed on the western perimeter of the site north of the soccer field (Figure 3). Adobe/loam soil extended to a depth of 90 cm, with an interim consolidated adobe layer from 30-60 cm. Below 90 cm the adobe soil became increasingly mixed with weathered, diatomaceous bedrock (Figure 6). Prehistoric cultural items were found on the surface and to a depth of 130 cm. The distribution frequency was fairly consistent to a depth of 110 cm where the artifact yield diminished substantially. Historic items were present to an 80 cm depth. Evidence of rodent activity occurred throughout the deposit; discing marks reached a maximum depth of 10 cm. Unit 0N/80W was excavated to a depth of 130 cm.

Chipped Stone

Bifaces. Chipped stone bifaces with intact stylistic attributes are often considered potentially time-sensitive artifacts (Deetz 1967; Hester 1976). Overall shape and size are generally considered important attributes, but it is basal morphology that usually has diagnostic value. Only one biface proximal fragment was found at CA-LAn-291. The other five specimens recovered are distal fragments and probably represent breakage during manufacture. Metric attribute data for the six biface fragments are presented in Table 8.

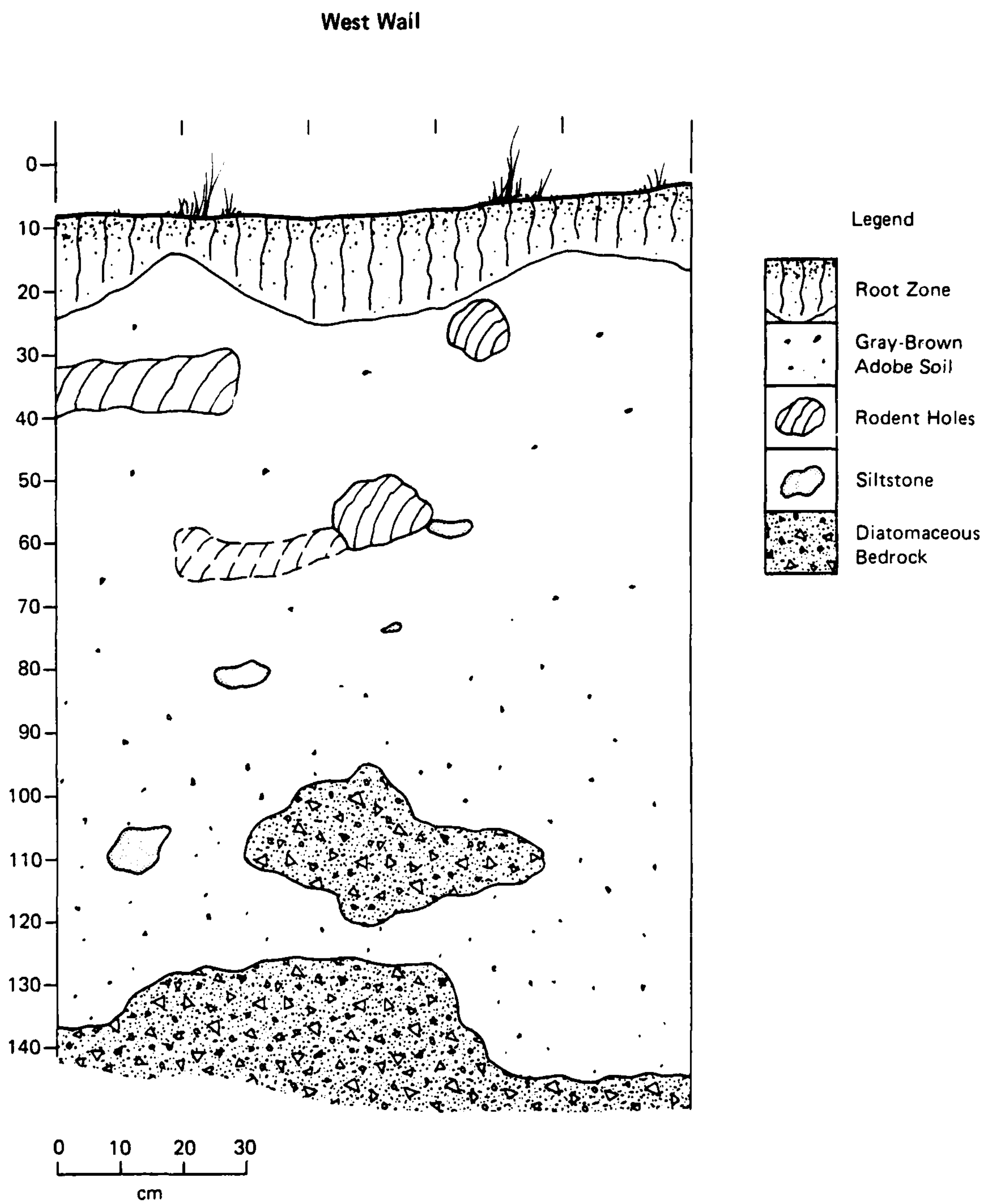
The biface proximal fragment (specimen #291-79; Figure 7A) was located in the 20-40 cm level of STP X. A portion of the base and the entire distal section are missing. The intact proximal portion suggests a basal concavity. Given its relative thinness (0.5 cm) and finely executed pressure flaking, the biface was probably in finished form and not broken during manufacture.

All remaining biface fragments were found on the surface of CA-LAn-291 and represent early stages of manufacture. The largest specimen (#291-264; Figure 7B) exhibits several deep, wide flake scars along one lateral margin. Flake removal appears to have been accomplished by hard-hammer percussion. An improper blow most likely caused a perverse fracture opposite the bifacial margin. A smaller biface fragment, also of chert, is much thinner and is also unfinished (specimen #291-271). Several hard-hammer percussion flakes were removed from the lateral margin but a misdirected or inappropriately applied blow caused the item to fracture during manufacture. Of the three remaining distal biface fragments, specimen #291-275 is similarly unfinished although more finely flaked. It was manufactured, using hard-hammer percussion, on a tabular piece of cherty shale. One lateral margin features a series of flake scars that extend up to a centimeter across the dorsal and ventral surfaces. Portions of early stage flake scars are also visible on these surfaces. The opposite lateral margin displays two large and deep, alternating flake scars. Attempted removal of a third such flake was unsuccessful and caused a perverse fracture. Specimen #291-266 is a portion of a biface which was roughly shaped by percussion flaking. Remnants of three large flake scars are visible on one face and two similar flake scars are visible on the opposite face. This latter face also exhibits a series of four small unifacial flake scars along the lateral margin. An impurity within the stone, a misdirected blow, or a combination of the two resulted in a snap fracture that runs diagonally toward the lateral margin. The relative thickness and the roughly shaped faces suggest that the biface fractured during an early stage of manufacture. The final specimen (#291-267)



CA-LAn-291 Unit 159N/71W

FIGURE 5



CA-LAn-291 Unit 0N/80W

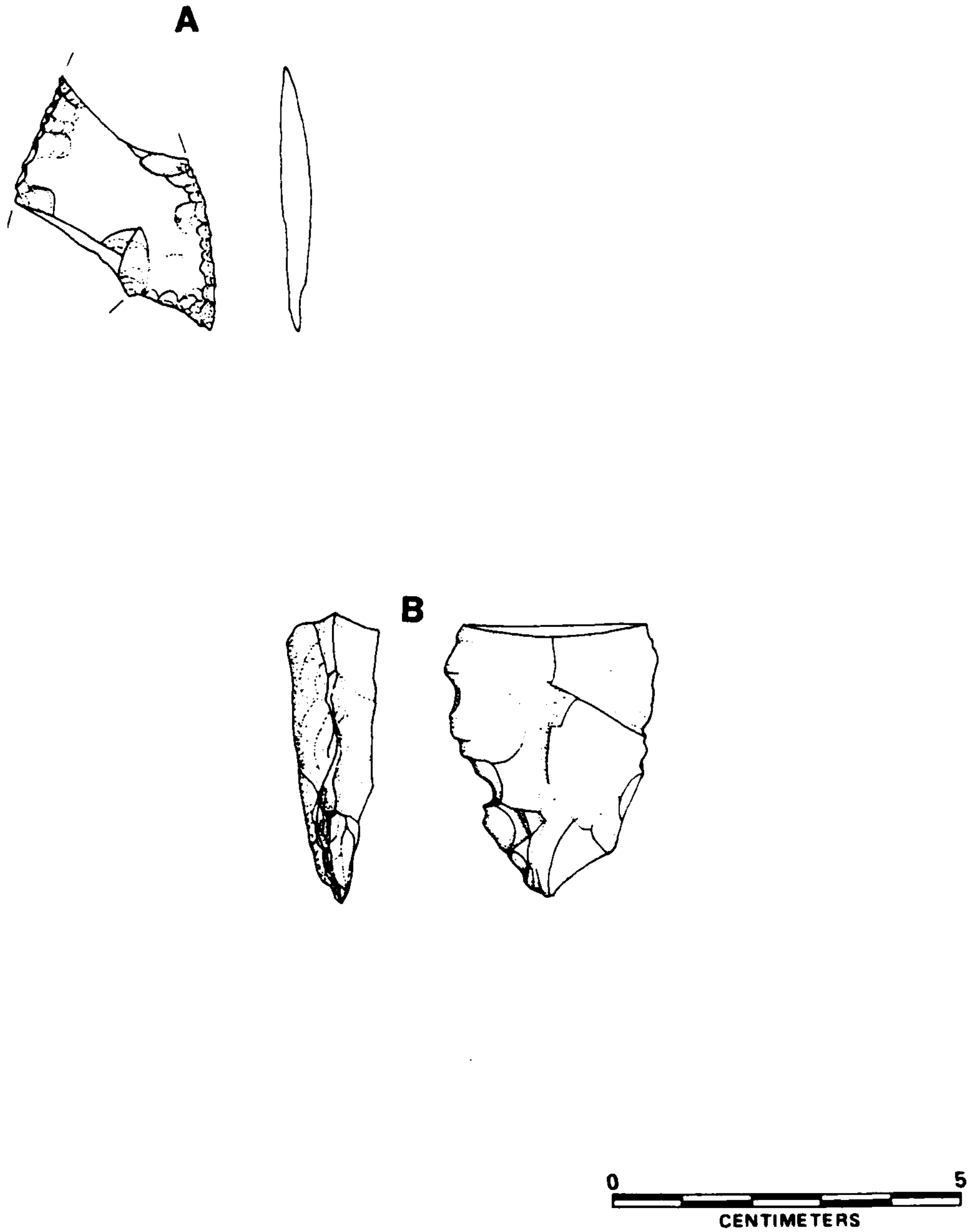
FIGURE 6

WESTEC Services, Inc.

Table 8

METRIC ATTRIBUTE DATA FOR
BIFACE FRAGMENTS FROM CA-LAn-291

Catalogue Number	Provenience	Depth (cm)	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)	Material
291-79	STPX	20-40	4.2	2.0	0.5	4.1	Chert
291-264	9S/13E	Surface	3.8	3.0	1.2	12.0	Chert
291-266	5N/11E	Surface	4.1	2.7	2.0	13.7	Chert
291-267	30N/22E	Surface	4.0	2.7	1.0	9.0	Cherty Shale
291-271	33N/3W	Surface	3.0	1.1	1.0	3.6	Chert
291-275	13N/29E	Surface	4.5	3.3	1.1	13.5	Cherty Shale



A. CA-LAn-291 Catalogue No. 79 Biface Midsection	B. CA-LAn-291 Catalogue No. 264 Biface Fragment	**FIGURE 7**

is a reduction flake classified as a biface because it was worked prior to its removal from the original biface. Evidence of bifacial working includes a number of flake scars on the dorsal surface and on the platform. It appears to have been shaped and then detached during an early stage of biface reduction.

Cores. Two cores were recovered during the excavation of STP 0N/80W at CA-LAn-291. Metric attribute data are presented in Table 9. Specimen #291-6 is large, tabular, and made of brown Monterey chert containing numerous white bands. A thin band of cherty or silty shale covers the two external, parallel faces. It is unclear whether these represent cortical or weathered surfaces.

A second smaller core (specimen #291-14) was fashioned from an almost completely translucent brown Monterey chert with only a few inclusions of white, silty material concentrated in one small area. It was recovered in the 30-40 cm level of unit 0N/80W. Numerous whole and several partial flake scars indicate multiple platforms.

Modified Flakes. Of the 137 flakes collected at LAn-291, only five show evidence of use-related or purposeful modification. Two of these exhibit wear damage on their feathered distal edge margins. A third flake was both use-modified and reworked along one margin, and a fourth flake was retouched around what remains of its perimeter. Inclusions in the stone caused the remainder of the latter flake to break away during retouching, leaving a sharp, perverse fracture along one side. Absence of use-wear indicates the flake was probably discarded when fractured. The lack of pronounced impact scars on the strike-point of this specimen suggests that the steep angle of retouch (60-65 degrees) was produced by a soft hammerstone.

The fifth specimen is a use-modified, cherty shale flake recovered from STP 160N/60W at the 20-40 cm level. Use wear occurs along the distal margin where the edge is concave. A series of small flake scars is visible along the ventral surface of the distal margin; none occur on the dorsal surface - apparently indicating use as a scraping tool and a unidirectional working motion. Some discoloration is present that may indicate heat treatment. Metric attribute data for the modified flakes from CA-LAn-291 are presented in Table 10.

Debitage. A total of 132 unmodified flakes and 134 pieces of chipped stone angular waste was collected during the test excavation at CA-LAn-291. Metric attribute data are presented in Appendix B and graphically illustrated in Figure 8. Stratigraphic distributions are summarized, by frequency and weight, in Tables 11 through 13. Of the 132 flakes, 96 (73%) are whole and 36 (27%) are fragmentary. Eighty-four percent (111) of the flakes are chert, and 21 (16%) are cherty shale. Virtually all (96%) of the flakes are interior, and 99 (75%) exhibit patterned dorsal flake scars. These data suggest that quarrying and initial core reduction took place elsewhere and that stoneworking at CA-LAn-291 was confined to secondary core reduction, biface reduction, and, to a limited extent, retouching. Also, 52 (39%) of the flakes show evidence of biface core reduction, and 67 (51%) show evidence of core reduction.

The primary technique used in flake production was apparently soft-hammer percussion. Of the 132 flakes, 112 (85%) are soft-hammer flakes. This production technique appears to be relatively common in the Palos Verdes Peninsula area (Cooley 1982) and may reflect the abundance of local siltstones and cherty shale nodules suitable for use as hammerstones. Seventy-nine (59%) of the flakes exhibit hinge or

Table 9

METRIC ATTRIBUTE DATA FOR CORES FROM CA-LAn-291

CORES

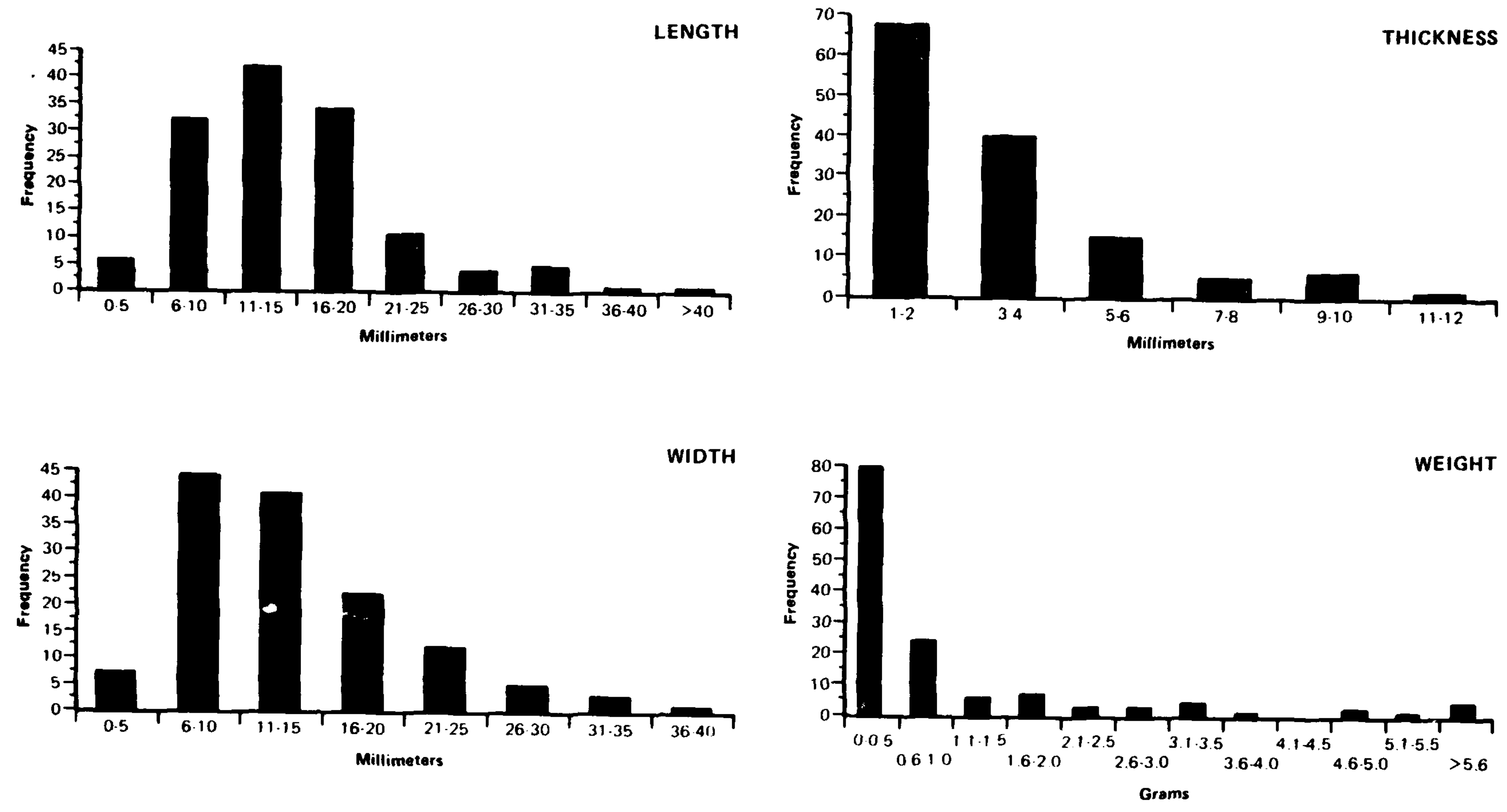
Catalogue Number	Provenience	Depth (cm)	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)	Material
#291-6	0N-80W	20-30	6.7	4.6	3.0	53.4	Chert
#291-14	0N-80W	30-40	4.3	2.7	1.9	16.8	Chert

Table 10

METRIC ATTRIBUTE DATA FOR MODIFIED FLAKES FROM CA-LAn-291

Catalogue Number	Provenience	Depth (cm)	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)	Use-Modified	Retouched	Material
291-36	0N/80W	80-90	2.7	3.0	0.6	3.2	+	-	Chert
291-215	160N/60W	20-40	4.5	6.0	1.2	39.0	+	-	Cherty Shale
291-217	160N/60W	40-60	2.4	1.9	0.5	2.2	+	-	Chert
291-238	180N/80W	60-80	3.5	2.6	0.8	9.1	+	+	Chert
291-269	160N/60W	Surface	3.2	2.1	1.1	7.2	-	+	Chert

+ Present
- Absent



Histograms of Flake Attribute Data, CA-LAn-291

FIGURE 8

WESTEC Services, Inc.

Table 11

STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE IN UNIT 159N/71W AT CA-LAn-291*

Depth (cm)	Frequency		Weight (g)
	Flakes	Angular Waste	Flakes
0-10	3	2	-
10-20	9	14	5.6
20-30	5	13	2.4
30-40	1	3	0.1
Total	18	32	8.1

*Material: chert and cherty shale

Table 12

STRATIGRAPHIC DISTRIBUTION OF FLAKES
AND ANGULAR WASTE IN UNIT 0N/80W AT CA-LAn-291*

Depth (cm)	Frequency: Flakes	Frequency: Angular Waste	Weight (g): Flakes
0-10	2	2	0.1
10-20	2	6	5.4
20-30	6	4	2.2
30-40	2	3	0.5
40-50	6	1	22.7
50-60	9	1	10.1
60-70	6	3	4.8
70-80	2	2	0.6
80-90	3**	5	0.5
90-100	3	2	1.7
100-110	3	2	1.8
110-120	1	3	0.1
120-130	-	1	-
Total	45	34	50.5

*Material: chert and cherty shale

**Material: includes one obsidian flake

Table 13

STP STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE AT CA-LAn-291*
Frequency (weight [g])

STP	Item	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
0N/40W	Flake	1 (0.1)	-	-	-	-	1 (0.1)
	Angular Waste	-	-	-	-	-	-
0N/60W	Flake	3 (1.0)	1 (3.1)	-	-	-	4 (4.1)
	Angular Waste	5	1	-	-	-	6
20N/40W	Flake	-	-	-	-	-	-
	Angular Waste	2	-	-	-	-	2
30N/0W	Flake	-	3 (1.5)	3 (6.6)	-	-	6 (8.1)
	Angular Waste	3	1	-	-	-	4
40N/80W	Flake	2 (0.8)	-	-	-	-	2 (0.8)
	Angular Waste	2	-	-	-	-	2
60N/40W	Flake	2 (1.0)	-	-	-	-	2 (1.0)
	Angular Waste	-	-	-	-	-	-
60N/60W	Flake	-	1 (0.3)	1 (0.5)	-	-	2 (0.8)
	Angular Waste	-	-	-	-	-	-
80N/40W	Flake	2 (0.5)	-	2 (1.5)	1 (0.3)	-	5 (2.3)
	Angular Waste	5	-	2	2	-	9
80N/60W	Flake	-	-	-	1 (0.8)	-	1 (0.8)
	Angular Waste	1	-	-	-	-	1
80N/80W	Flake	-	1 (0.1)	-	-	-	1 (0.1)
	Angular Waste	3	-	-	-	-	3
100N/0W	Flake	1 (0.1)	-	-	-	-	1 (0.1)
	Angular Waste	5	1	1	-	-	7
100N/60W	Flake	-	-	-	-	1 (5.7)	1 (5.7)
	Angular Waste	-	-	-	-	1	1
100N/80W	Flake	-	-	-	-	-	-
	Angular Waste	1	-	-	-	-	1

*Material: chert and cherty shale; STPs lacking flakes or angular waste not listed

Table 13 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE AT CA-LAn-291*
Frequency (weight [g])

STP	Item	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
120N/20W	Flake	-	-	-	-	-	-
	Angular Waste	1	-	-	-	-	1
120N/80W	Flake	2 (0.4)	2 (0.3)	3 (6.0)	-	-	7 (6.9)
	Angular Waste	1	1	1	-	-	3
140N/40W	Flake	-	4 (2.8)	1 (2.2)	1 (4.0)	-	6 (9.0)
	Angular Waste	-	2	1	1	-	4
140N/60W	Flake	2 (1.7)	-	-	-	-	2 (1.7)
	Angular Waste	-	-	-	-	-	-
160N/60W	Flake	-	-	1 (8.7)	-	-	1 (8.7)
	Angular Waste	-	-	-	-	-	-
160N/80W	Flake	1 (1.2)	-	-	-	-	1 (1.2)
	Angular Waste	1	-	-	-	-	1
180N/80W	Flake	3 (0.7)	1 (1.4)	2 (0.4)	-	-	6 (2.5)
	Angular Waste	4	-	-	-	-	4
60N/20E	Flake	-	-	-	2 (2.0)	-	2 (2.0)
	Angular Waste	-	-	-	1	-	1
STP "X"	Flake	7 (12.9)	4 (4.1)	5 (0.9)	2 (1.2)	-	18 (19.1)
	Angular Waste	12	3	4	-	-	19

*Material: chert and cherty shale; STPs lacking flakes or angular waste not listed

step terminations, while the remainder exhibit feathered terminations. The latter are considered preferable. Hinge and step fractures are generally the result of a misdirected blow or a poorly supported core. Exposure of the raw material to high temperatures is indicated for 62 (45%) of the unmodified flakes from CA-LAn-291.

Ground Stone

Mortars. Two rim fragments and one complete, portable mortar were found on the surface at CA-LAn-291 (Table 14). The specimens were manufactured from sandstone. Rim curvature and thickness suggest they may have been about 25 cm tall and 25 cm in diameter. Depths of the mortar cavities cannot be estimated.

The complete specimen (Figure 9) was manufactured from a natural cobble, required minimal shaping, and probably functioned as a basket-hopper mortar. It measures 12.1 x 11.9 cm and is approximately 6.2 cm thick. The cavity is 8 cm in diameter and has a maximum depth of 1.9 cm. The entire outer perimeter of the mortar lip is surrounded by a 1-2 cm pecked collar. No asphaltum was evident around the rim. The mortar cavity is well-worn and smooth, especially in its deeper portion. Upper portions of the cavity are more roughly-textured and exhibit some of the same pecking that is present around the outside of the cavity lip. It is also possible that the mortar is unfinished and an example of a stage of manufacture rather than of finished form. Repeated pecking and grinding were common methods used in manufacturing mortars (Bryan 1961). A similar mortar was recovered from San Pedro Harbor site (LAn-283) measuring 12 x 11 x 7 cm with a cavity depth of 3 cm (Butler 1974:32). This mortar had been minimally pecked into a rough square shape.

Pestles. Pestles were used with mortars to pound and/or mulch vegetable and other food items, and often in the preparation of pigments. Two complete siltstone pestles were found on the surface at CA-LAn-291 (Table 15). The smaller specimen (#291-270) weighs 83.7 g and was blunted on both ends by battering or pounding. Its longitudinal axis exhibits numerous gouges and manufacturing scars. The small size and relatively light weight of this pestle suggest that, rather than having been used in seed processing, it may have been employed to break down softer materials (e.g., shellfish).

The larger pestle (#291-279) was manufactured from an extremely indurated, fine-grained siltstone (Figure 10). It was shaped and retains evidence of pounding or battering on the distal end. The perimeter of the distal end is worn or rounded from grinding. A large flake from the proximal section of the pestle was found less than a meter away (the two pieces are joined in Figure 10). Battering is also visible around the perimeter of the proximal end, with grinding, polishing, and a few pecking marks visible along the sides of the pestle.

Hammerstones

Four hammerstones were collected from CA-LAn-291; three are of siltstone and the fourth is a dense volcanic rock (Table 16). The two larger siltstone hammers display extensive battering scars around their perimeters and show minimal scarring on their flat faces. These two hammerstones are almost identical in size and shape, although specimen #291-274 (Figure 11A) is slightly thicker and heavier.

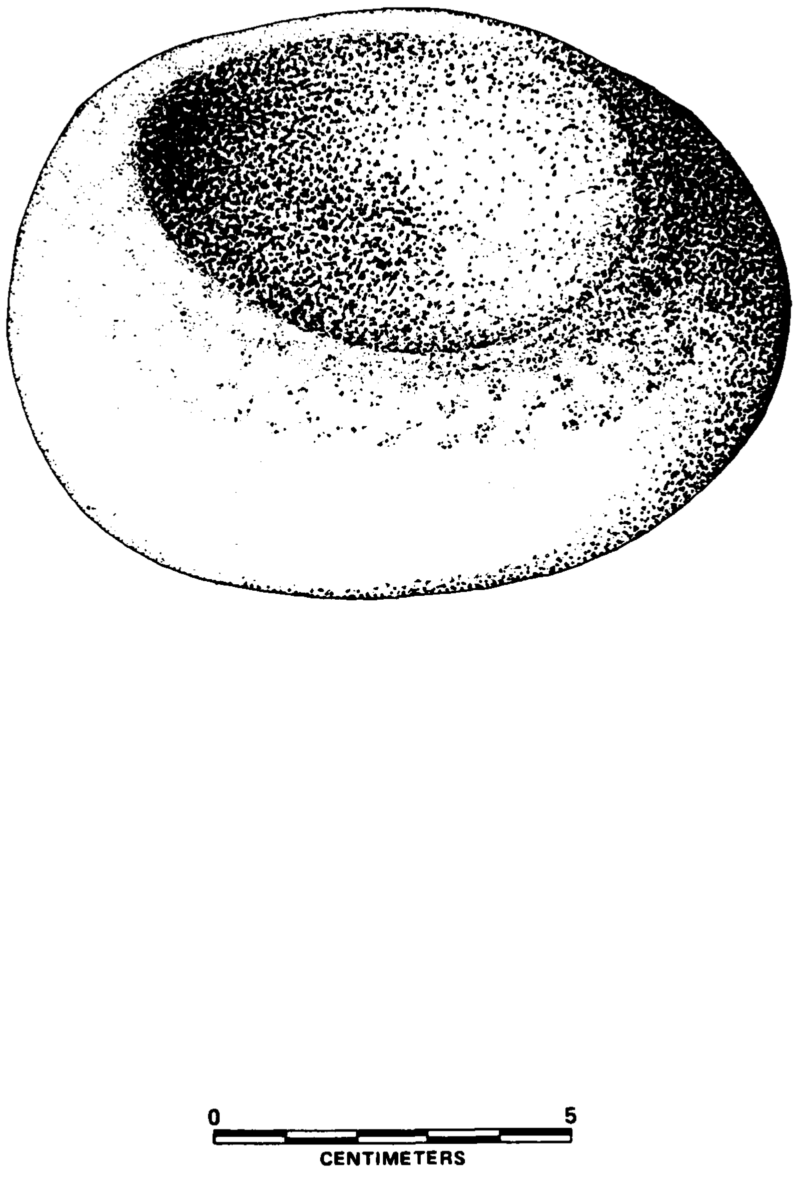
The third siltstone hammer is a flat, oval cobble that exhibits battering scars on both ends. Minimal battering has occurred along one of the lateral margins. Because

Table 14

METRIC ATTRIBUTE DATA FOR MORTARS FROM CA-LAn-291

Catalogue Number	Provenience	Depth (cm)	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)	Material
262*	3N/86W	Surface	6.5	5.4	3.5	95.9	Sandstone
265*	5N/11E	Surface	6.2	5.6	3.7	163.4	Sandstone
278	19N/19E	Surface	12.1	11.9	6.2	663.0	Sandstone

*Rim fragment



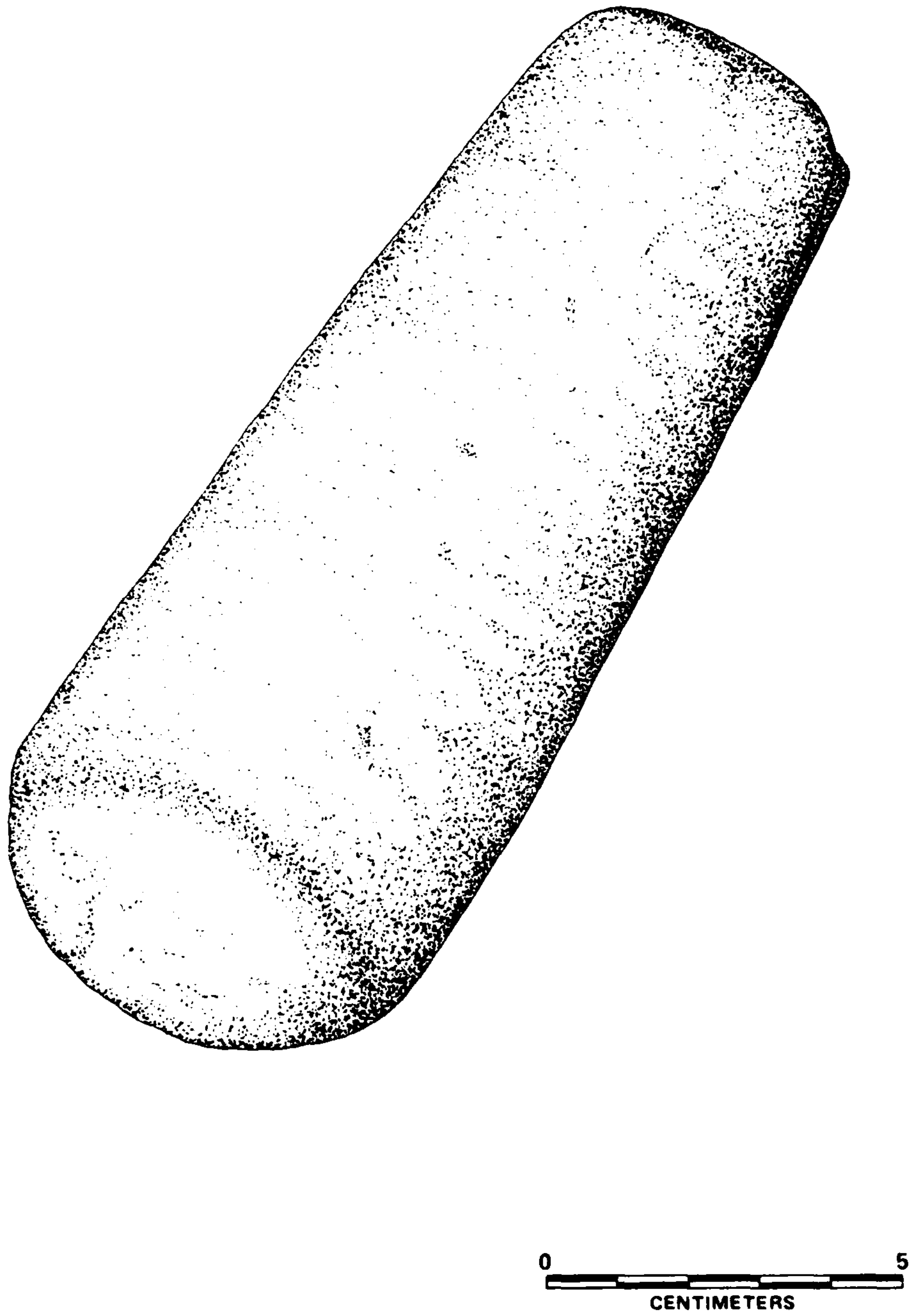
CA-LAn-291
Catalogue No. 278
Mortar

FIGURE 9

Table 15

METRIC ATTRIBUTE DATA FOR PESTLES FROM CA-LAn-291

Catalogue Number	Provenience	Depth (cm)	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)	Material
270	18S/2E	Surface	7.2	3.1	2.9	83.7	Siltstone
279	25N/4W	Surface	16.0	7.1	6.0	697.0	Silicified Siltstone



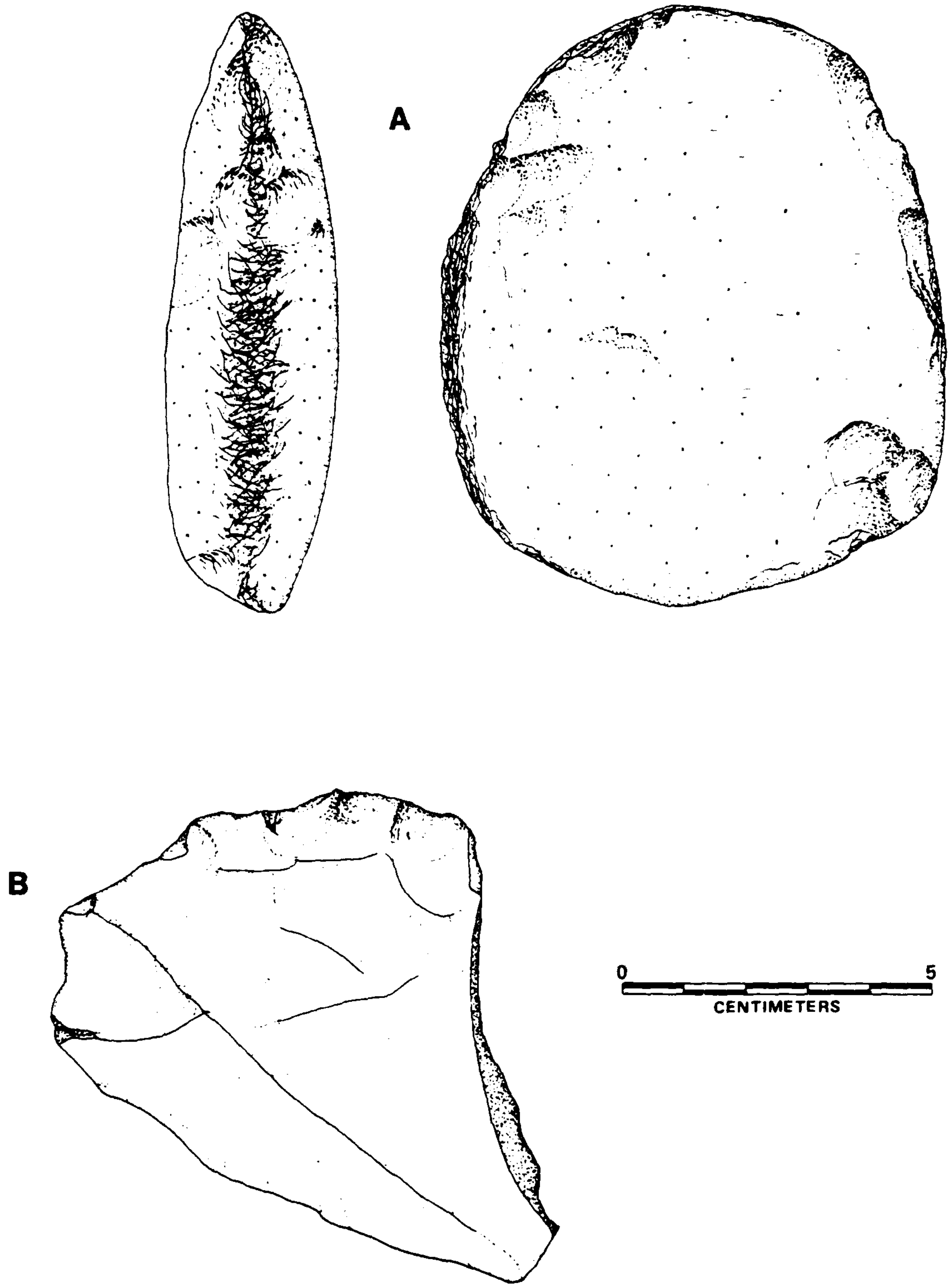
CA-LAn-291
Catalogue No. 279
Pestle

FIGURE 10

Table 16

METRIC ATTRIBUTE DATA FOR HAMMERSTONES FROM CA-LAn-291

Catalogue Number	Provenience	Depth (cm)	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)	Material
291-59	159N/71W	10-20	9.7	5.2	2.4	101.1	Siltstone
291-272	33N/7W	Surface	9.5	8.1	3.0	304.6	Siltstone
291-294	16N/21E	Surface	10.3	8.2	1.8	238.3	Siltstone
291-263	4S/17E	Surface	7.2	4.3	3.3	170.4	Fine-grain Dense Volcanic



A. CA-LAn-291 Catalogue No. 274 Hammerstone	B. CA-LAn-291 Catalogue No. 273 Unifacial Chopper	FIGURE 11

WESTEC Services, Inc.

siltstone is heavy and dense but not very hard, it seems likely that these tools functioned as soft hammers. Although hammerstones of harder materials can be used in chipped stone tool manufacture and maintenance, and in ground stone tool shaping, these siltstone hammers are too soft to be effective in ground stone tool production. They are ideally suited to the soft-hammer working of Monterey chert (Cooley 1982).

The fourth hammerstone is made of a dense, fine-grained volcanic material (Figure 12). The tool has a smooth cortical surface on three of its faceted surfaces. The fourth side has been naturally fractured, and both ends show evidence of battering. A worn area is located near one end, possibly indicating the implement was held in such a consistent manner that a small wear pattern developed from the friction between hand and stone accompanying each blow. Many comparable knapping stones were found at the nearby San Pedro Harbor site (Butler 1974).

Scraper

One cherty shale, unifacially modified "scraper" was recovered during surface collections at CA-LAn-291. It measures 6.9 x 5.1 x 1.9 cm and weights 67.6 g. This large soft-hammer flake displays several multidirectional flake scars on its dorsal surface. The straight working edge is opposite from, and horizontal to, the platform. Numerous small flake scars are visible and suggest that the tool was most probably used for several purposes, e.g., cutting or sawing as well as scraping. Flake scars are fairly evenly distributed along the margin of the dorsal and ventral surfaces.

Chopper

A single chopping tool (specimen #273) was recovered from the surface of CA-LAn-291 (Figure 11B). It is a siltstone cobble spall with cortex on the convex surface. Modification is present along one margin, where at least four soft-hammer unifacial retouch flakes were struck. This edge is also slightly battered and blunted.

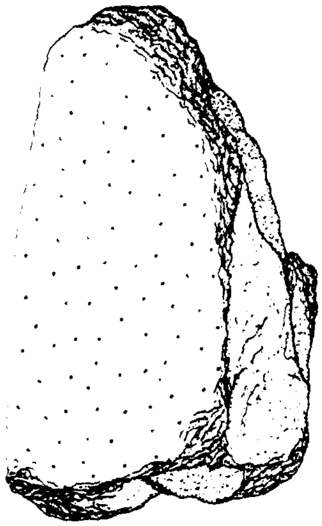
Shell Beads

Two shell beads or bead fragments were recovered at CA-LAn-291. An Olivella spire-lopped bead (specimen #76) was recovered from STP X in the 0-20 cm level. It is 6.5 mm in length, has a maximum diameter of 5 mm, and weighs 0.1 g. Virtually complete except for a small portion that has broken away from the anterior end, the ground or lopped portion of the bead is intact. This bead is similar to the small spire-lopped Olivella beads recovered from humaliwo (Gibson 1975:114-115), and are assigned to the Early/Middle Period Transition and Middle Period. Small spire-lopped Olivella beads are also found in the Early Period and Phase 1 of the late period in central California (Fredrickson 1968).

The other specimen (#291-88; Figure 13B) is made of an unidentifiable species of shell, perhaps clam. It weighs 0.6 g, has a uniconically drilled hole in the center, and the perimeter has been rounded and smoothed. The bead was recovered in the 60-80 cm level of STP X.

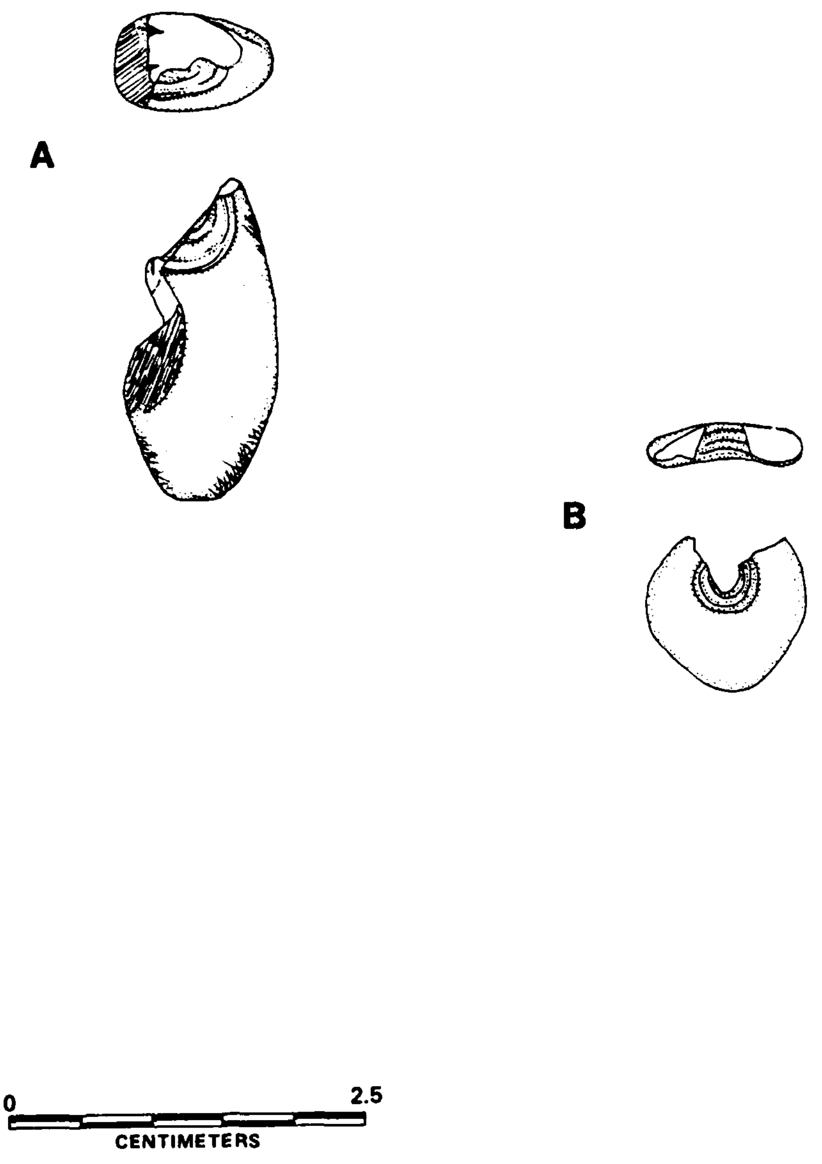
Faunal Remains

Animal Bone. The stratigraphic distribution (based on element frequencies and weights) of faunal remains recovered during the test excavation at CA-LAn-291 is



CA-LAn-291
Catalogue No. 263
Knapping Hammer

FIGURE
12



A. CA-LAn-1269 Catalogue No. 263 Steatite Pendant	B. CA-LAn-291 Catalogue No. 88 Shell Bead	FIGURE 13

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summarized in Tables 17 through 19. Four terrestrial mammal species and two species of marine animal are represented. Remains of the former are indicative of small animals. Pocket gopher (Thomomys bottae), woodrat (Neotoma sp.), and California ground squirrel (Spermophilus beecheyi) have been identified. Also recovered was a skeletal element identified as Cervus (this may be Odocoileus sp.); however, the specimen is too fragmentary to make an accurate appraisal. Based on the condition of the analyzed bone, the identified elements appear to be instrusive and most likely the remains of burrow-dead individuals rather than the result of prehistoric human subsistence activities. One large otolith of a bony fish was found at the site, along with three centra identified as elasmobranchs (sharks and rays). The otolith and centra are presently undergoing further study to determine genus and species.

A total of 17 g of unidentifiable faunal remains was collected. Seven grams have been classified as small mammal, 10 g as large mammal. Approximately 50 percent (by weight) of the bone in both categories is burnt or charred. The shattered condition of most of the bone, in particular the fire-affected elements, probably reflects human food preparation activities.

Shellfish. A total of 801.2 g of shell was recovered from CA-LAn-291. Stratigraphic distributions based on frequency and weight are summarized in Tables 20 through 22. Only 120 diagnostic whole specimens or hinge fragments were found. By weight, Mytilus (25%) and Haliotis (21%) species dominate the sample. Tegula (6%) is the next most represented genus, followed by Pecten (3%), Chione (2%), and chiton and Lottia gigantia (1% each). Cardium, Acmaea, Crucibulum, Fissurella, Ostrea, Tresus nuttali, Balanus, Tetraclita, and Olivella biplicata species comprise 17% of the sample. Twenty-four percent of the shell are unidentifiable to genus or species.

Mytilus shell was common throughout excavation unit 0N/80W. Haliotis remains predominated in the 20-90 cm levels. The vertical distribution of the remains of Pecten and Chione varied little in this unit, although their representation was as much as 12% in one level (Table 20).

Interestingly, in unit 159N/71W, Cardium shell was dominant, with a moderate representation of Mytilus and slightly lesser amounts of Tegula (Table 21). No pattern of reliance on one specific habitat over another is discernable from the shellfish assemblage from this unit. It would appear that the prehistoric occupants of CA-LAn-291 exploited marine resources from rocky shore, tidepool, sandy beach, bay, and mudflat habitats. Quantitative variations in the types of shellfish archaeologically represented can be detected, but no significant differences are apparent. This may simply indicate that the nearest or most accessible shellfish habitats were exploited.

WHITE POINT

CA-LAn-1269

One archaeological area identified as Site-9 by Eberhart (Weil and Weisbord 1984) and recorded at UCLA as CA-LAn-1269 lies within project boundaries of the White Point study area. Past agricultural and military developments have disturbed, to one degree or another, the archaeological deposit at CA-LAn-1269. Farming in the early 1900s resulted in the removal of most of the larger surface rocks. In an interview with Sumi Seki, a former resident of the house once located at CA-LAn-152 immediately west of CA-LAn-1269, Mrs. Seki stated that the cleared rocks were used to construct a small wall that served as a property boundary.

Table 17

STRATIGRAPHIC DISTRIBUTION OF ANIMAL BONE
IN UNIT 159N/71W AT CA-LAn-291

Depth (cm)	Genus/Species: Unidentified Large Mammal		Unidentified Fish	
	Frequency	Weight (g)	Frequency	Weight (g)
10-20	1	2.0	1*	0.5
Total	1	2.0	1	0.5

*Otolith fragment

Table 18

STRATIGRAPHIC DISTRIBUTION OF ANIMAL BONE
IN UNIT 0N/80W AT CA-LAn-291

	Genus/Species			
	Unidentified Small Mammal		Unidentified Fish (Shark or Ray)	
Depth (cm)	Frequency	Weight (g)	Frequency	Weight (g)
50-60	-	-	1	1.0
60-70	1	1.0	-	-
70-80	-	-	-	-
80-90	1	1.0	-	-
Total	2	2.0	1	1.0

Table 19

STP STRATIGRAPHIC DISTRIBUTION OF ANIMAL BONE
AT CA-LAn-105 AND CA-LAn-291*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
20S/100E	*Cervus*	Frequency	-	1	-	-	-	1
		Weight (g)	-	1.0	-	-	-	1.0
	Large Mammal	Frequency	-	1	-	-	-	1
		Weight (g)	-	1.0	-	-	-	1.0
0N/40W	*Neotoma*	Frequency	1	-	-	-	-	1
		Weight (g)	1.0	-	-	-	-	1.0
	Small Mammal	Frequency	1	-	-	-	-	1
		Weight (g)	1.0	-	-	-	-	1.0
40N/40W	*Spermophilus*	Frequency	1	-	-	-	-	1
		Weight (g)	1.0	-	-	-	-	1.0
40N/60W	*Spermophilus*	Frequency	-	-	-	6	-	6
		Weight (g)	-	-	-	5.5	-	5.5
	Shark/Ray	Frequency	-	-	-	2	-	2
		Weight (g)	-	-	-	1.5	-	1.5
	Small Mammal	Frequency	-	-	-	2	-	2
		Weight (g)	-	-	-	1.0	-	1.0
	Large Mammal	Frequency	-	-	-	3	-	3
		Weight (g)	-	-	-	2.0	-	2.0
80N/40W	Large Mammal	Frequency	1	-	1	-	-	2
		Weight (g)	2.0	-	1.0	-	-	3.0
80N/80W	*Thommys*	Frequency	1	-	-	-	-	1
		Weight (g)	1.0	-	-	-	-	1.0
	Small Mammal	Frequency	4	-	-	-	-	4
		Weight (g)	1.0	-	-	-	-	1.0
140N/40W	Large Mammal	Frequency	-	-	-	2	-	2
		Weight (g)	-	-	-	2.0	-	2.0
STP X	*Neotoma*	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	1.0	-	-	1.0
	Small Mammal	Frequency	1	1	-	-	-	2
		Weight (g)	1.0	1.0	-	-	-	2.0

*STPs lacking animal bone not listed

Table 20

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 0N/80W AT CA-LAn-291

Depth	Genera											
	Haliotis		Mytilus		Tegula		Chione		Pecten		Chiton	
(cm)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)
0-10	--	0.3	1	2.8	--	--	--	--	--	0.2	--	--
10-20	--	--	1	11.0	--	0.8	--	--	--	0.2	--	2.3
20-30	1	11.4	4	8.1	1	0.4	1	2.8	--	0.1	--	--
30-40	--	5.8	3	6.0	--	--	--	--	--	0.1	--	--
40-50	1	33.7	2	11.2	--	--	--	--	--	0.1	--	--
50-60	--	7.4	5	16.9	--	--	--	--	1	4.9	--	1.7
60-70	1	15.6	2	9.1	--	--	--	--	--	0.5	--	--
70-80	--	--	1	6.4	--	--	--	--	1	1.4	--	--
80-90	1	15.4	6	11.7	1	0.3	--	--	--	--	--	--
90-100	--	--	4	13.3	--	0.8	--	--	--	--	--	--
100-110	--	0.8	--	2.9	--	--	--	--	1	0.9	--	--
110-120	--	--	--	0.5	--	--	--	--	--	--	--	--
120-130	--	--	--	--	--	--	--	--	--	--	--	--
Total	4	90.4	29	99.9	2	2.3	1	2.8	3	8.4	--	4.0

*Frequency of whole shells, hinges, or spines

Table 20 (Continued)

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 0N/80W AT CA-LAn-291

Depth	Genera											
	Acamea		Laevecardium		Lottia		Misc.		Unidentifed		Total	
(cm)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Weight	MNI
0-10	--	0.3	--	0.5	--	--	--	--	--	0.3	4.4	1
10-20	--	--	--	--	--	--	--	--	--	4.9	19.2	1
20-30	--	--	--	--	--	--	--	--	--	2.0	24.8	7
30-40	--	--	--	--	--	--	--	--	--	1.9	13.8	3
40-50	--	--	--	2.7	--	--	Crucibulum Fisserella 2	0.2	--	5.2	53.1	5
50-60	--	--	--	--	--	--	Ostrea	0.1	--	10.1	41.1	6
60-70	--	--	--	--	1	2.8	--	--	--	10.3	38.3	4
70-80	--	--	--	--	--	--	--	--	--	6.7	14.5	2
80-90	--	--	--	--	--	--	--	--	--	8.1	35.5	8
90-100	--	--	--	1.2	--	0.8	Crucibulum Tresus 2	1.3	--	8.6	26.0	6
100-110	--	--	--	2.2	--	--	Balanus	1.4	--	1.5	9.7	1
110-120	--	--	--	--	--	--	--	--	--	--	0.5	--
120-130	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	0.3	--	6.6	1	3.6	4	3.0	--	59.6	280.9	44

*Frequency of whole shells, hinges, or spines

Table 21

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 159N/71W AT CA-LAn-291

Depth	Genera											
	Haliotis		Mytilus		Tegula		Chione		Pecten		Chiton	
(cm)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)
0-10	--	1.2	--	0.6	--	0.2	--	--	--	--	--	--
10-20	--	5.4	--	1.4	2	5.6	1	3.8	--	0.2	--	--
20-30	1	6.2	4	6.4	1	2.5	1	4.6	--	--	--	--
30-40	1	0.6	--	--	1	1.0	--	--	--	--	--	0.1
Total	2	13.4	4	8.4	4	9.3	2	8.4	--	0.2	1	0.1

Depth	Genera									
	Tetraclita		Astraea		Laevecardium		Unidentified		Total	
(cm)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Weight	MNI
0-10	--	0.3	--	--	--	0.8	--	--	3.1	--
10-20	--	--	--	0.1	--	--	--	4.9	21.4	3
20-30	--	--	--	--	--	--	--	2.9	22.6	7
30-40	--	--	--	--	--	8.2	--	0.8	10.7	2
Total	--	0.3	--	0.1	--	8.2	--	9.4	57.8	12

*Frequency of whole shells, hinges, or spines

Table 22

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-291

STP	Genus	Quantity**	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
0N/20W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
0N/40W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	1.1	-	0.2	0	1.4
	Lottia	Frequency	-	-	-	-	-	-
		Weight (g)	0.6	-	-	-	-	0.6
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	0.2	-	-	-	0.5
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.4	1.0	-	0.1	-	1.5
0N/60W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	-	-	-	-	0.3
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	0.4	-	-	-	-	0.4
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.6	0.7	0.2	-	-	1.5
20N/40W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
20N/60W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.2	0.8	0.1	-	-	1.1
30N/0W	Mytilus	Frequency	-	-	1	-	1	2
		Weight (g)	-	2.1	1.2	0	0.6	3.9
	Tetraclita	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.2	-	-	-	0.2
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.7	0.4	-	-	1.1
40N/60W	Olivella	Frequency	-	-	-	1	-	1
		Weight (g)	-	-	-	0.5	-	0.5

Table 22 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-291

STP	Genus	Quantity**	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	1.4	1.9	-	-	-	3.3
60N/40W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
60N/60W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-				
80N/40W	Mytilus	Frequency	-	1	-	1	-	2
		Weight (g)	1.3	1.0	2.2	8.1	-	13.1
	Haliotis	Frequency	-	-	-	-	-	-
		Weight (g)	-	2.0	-	-	-	2.0
	Tetraclita	Frequency	1	-	-	-	-	1
		Weight (g)	0.1	-	-	0.2	0	0.3
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	3.0	1.7	2.4	1.3	-	8.4
80N/60W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.3	-	-	0.3
80N/80W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.2	-	-	-	0.2
100N/0W	Mytilus	Frequency	1	-	-	-	-	1
		Weight (g)	2.3	-	-	-	-	2.3
	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	-	-	-	-	0.3
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
100N/60W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.2	-	0.2
100N/80W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.6	-	-	0.6

Table 22 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-291

STP	Genus	Quantity**	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
120N/20W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.2	-	-	-	-	0.2
120N/80W	Mytilus	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.6	-	1.1	-	1.7
	Haliotis	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	6.9	-	-	6.9
	Laevecardium	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.6	-	0.6
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.6	1.3	0.5	0.8	-	3.2
140N/60W	Mytilus	Frequency	-	1	-	-	-	1
		Weight (g)	-	1.2	-	-	-	1.2
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	0.3	0.3	-	-	0.7
140N/40W	Mytilus	Frequency	3	3	4	3	-	13
		Weight (g)	5.3	5.7	7.3	3.8	-	22.1
	Haliotis	Frequency	-	-	-	1	-	1
		Weight (g)	-	-	-	53.1	-	53.1
	Chione	Frequency	-	1	-	1	-	2
		Weight (g)	-	0.6	-	1.0	-	1.6
	Pecten	Frequency	1	-	1	3	-	5
		Weight (g)	3.0	.5	2.9	3.7	-	12.1
	Chiton	Frequency	-	-	-	1	-	1
		Weight (g)	-	-	0.5	0.7	-	1.2
	Tegula	Frequency	1	1	2	1	-	5
		Weight (g)	1.0	2.4	2.5	0.9	1	6.8
	Tivella	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	1.9	-	-	1.9

Table 22 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-291

STP	Genus	Quantity**	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
	Laevecardium	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.7	-	-	0.7
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	5.6	7.5	8.7	4.5	-	26.3
140N/80W	Olivella	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	0.2	-	-	0.2
	Chiton	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	1.0	-	-	1.0
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.1	-	-	0.1
160N/60W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.3	-	-	0.3
	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.7	-	-	0.7
160N/80W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	0.9	-	-	-	-	0.9
	Haliotis	Frequency	-	-	1	-	-	1
		Weight (g)	-	10.1	114.7	-	-	124.8
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Tegula	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	3.0	-	-	3.0
	Laevecardium	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.5	-	-	0.5
180N/80W	Mytilus	Frequency	1	1	1	2	-	5
		Weight (g)	1.2	2.0	0.3	0.9	1.4	5.8
	Haliotis	Frequency	-	-	-	-	-	-
		Weight (g)	0.6	0.4	-	-	-	1.0
	Pecten	Frequency	-	-	-	1	-	1
		Weight (g)	0.2	0.3	0.2	0.4	-	1.1

Table 22 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-291

STP	Genus	Quantity**	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	0.6	0.4	-	1.1
	Chiton	Frequency	-	-	-	1	-	1
		Weight (g)	-	-	-	2.4	-	2.4
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	1.1	0.4	1.4	3.9	-	6.8
STP "X"	Mytilus	Frequency	8	7	4	3	-	22
		Weight (g)	11.0	11.5	10.8	1.6	-	34.9
	Haliotis	Frequency	-	-	-	-	-	-
		Weight (g)	2.8	-	-	-	-	2.8
	Tegula	Frequency	3	3	3	1	-	10
		Weight (g)	4.0	4.1	5.4	0.9	-	14.4
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.4	-	-	0.4
	Laevecardium	Frequency	-	-	-	-	-	-
		Weight (g)	0.9	-	-	-	-	0.9
	Tetraclita	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	-	-	-	-	0.3
	Acmaea	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.0	-	-	-	1.0
	Lottia	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.7	-	0.7
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	20.0	16.1	16.1	2.3	0	54.5
60N/20E	Chione	Frequency	1	-	-	-	-	1
		Weight (g)	1.6	-	-	-	-	1.6
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.8	-	0.8
80N/20E	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1

Table 22 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-291

STP	Genus	Quantity**	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
20S/100E	*Tegula*	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	0.6	-	-	0.6
	Lottia	Frequency	-	-	-	-	-	-
		Weight (g)	0.8	-	-	-	-	0.8
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.5	-	0.1	-	-	0.6

Military developments involved extensive ground disturbance within the study area and on surrounding properties. Construction of a Nike missile base and support facilities required massive subsurface excavation in some places. The construction of an aircraft landing strip further disturbed the surface and caused subsurface compaction. The construction of gun emplacements and bunkers north and west of the project area altered the terrain, changing drainage patterns across CA-LAn-1269

All of these factors were taken into account in locating the 41 STPs and three 1 x 1 m units excavated at the White Point location (Figure 14). To the extent possible, the 1 x 1 m units were concentrated in the area previously designated as Site-9 by Eberhart (Weil and Weisbord 1984). Soils and cultural materials encountered during STP excavations are summarized in Table 23.

Unit Stratigraphy

Unit 0N/10E was excavated to a depth of 60 cm. The deposit graded from adobe/loam (0-40 cm) to consolidated adobe with shale (40-60 cm). Cultural material (i.e., shell and a few chipped stone artifacts) occurred between 20-60 cm, with a maximum concentration of the shell between 30 and 50 cm. Discing marks extended to a depth of 30 cm. Evidence of rodent activity was observed throughout the deposit.

Adobe/loam soil was found to a depth of 60 cm in unit 10N/1W. This soil graded to consolidated adobe by 100 cm. The unit was excavated to a depth of 120 cm. A notable concentration of shale and shell was observed between 20 and 60 cm - the same levels that contained the highest frequency of cultural lithic and bone remains. Discing disturbance reached a depth of 20 cm, and evidence of rodent activity was present throughout the unit.

In the third 1 x 1 m unit (20S/9E) at CA-LAn-1269, the upper adobe/loam soil stratum began to grade into consolidated adobe below 30 cm depth and shale was common between 80-150 cm (Figure 15). Cultural material and shellfish remains were recovered in the first six levels, but none were found below 60 cm. Discing marks were relatively shallow (10 cm), but evidence of rodent activity was observed in all levels. The unit was excavated to a depth of 150 cm.

Chipped Stone

Biface. A thick biface margin fragment was recovered from the 20-40 cm level in STP 20N/0W. The fragment measures 2.1 x 0.7 x 0.9 cm and weighs 1.6 g. Based on the size and shape of the flake scars, hard-hammer percussion appears to have been the method of flake detachment. Traces of alternating flake scars are visible on one edge. An improper hammer blow apparently caused this portion to fracture away from the biface.

Cores. Two cores were recovered during the excavation at CA-LAn-1269. Specimen #9-241 is a multiplatform, multidirectional core fragment of tabular chert. One horizontal surface contains a large remnant of less silicious, shaley material. Flaking patterns indicate that this undesirable material was being removed in an attempt to get at interior layers of better quality chert. The core measures 5.8 x 4.3 x 2.1 cm and weighs 47.5 g. It was found in the 50-60 cm level of unit 10N/1W.

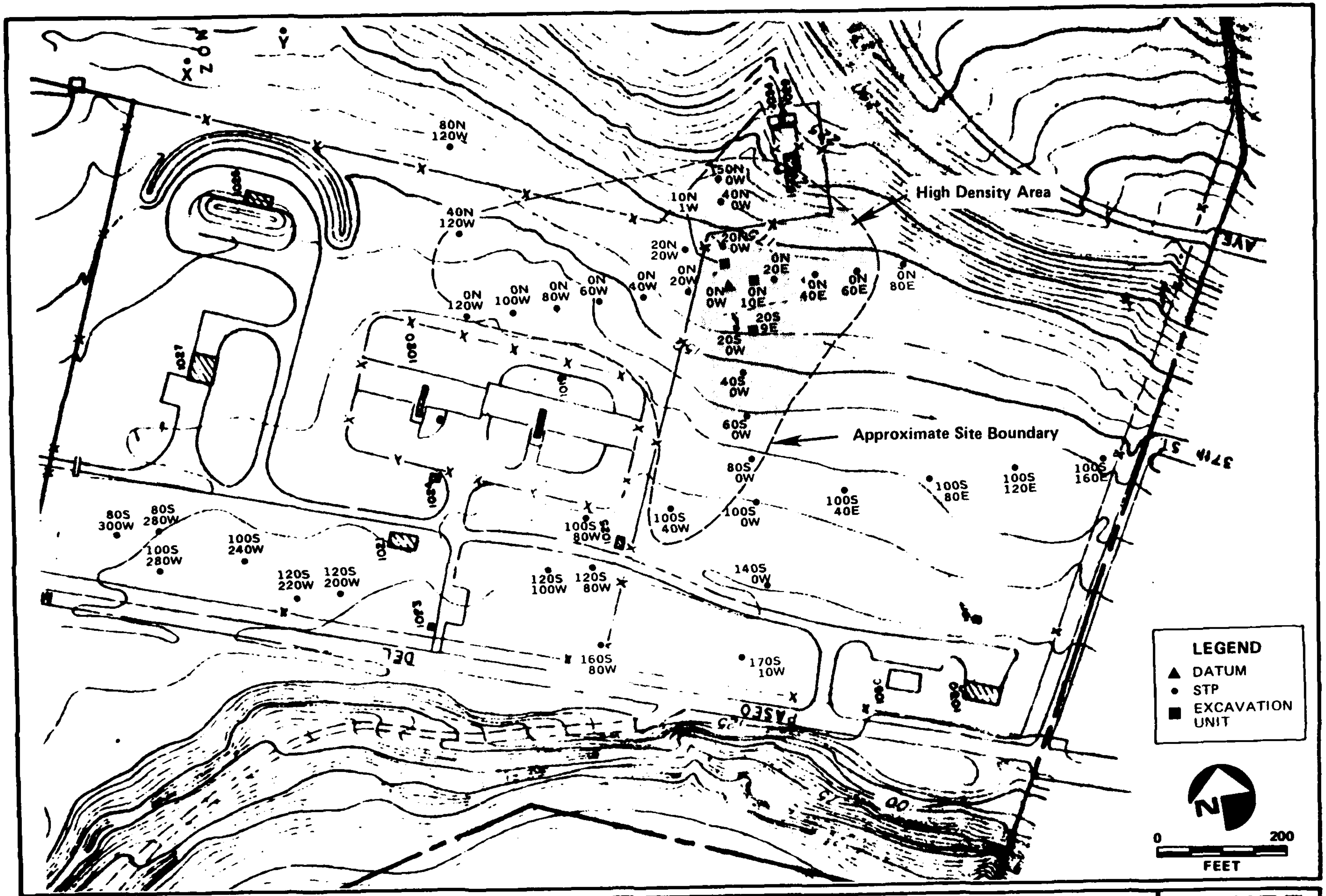


FIGURE 14

White Point CA-LAn-1269

WESTEC Services, Inc.

Table 23

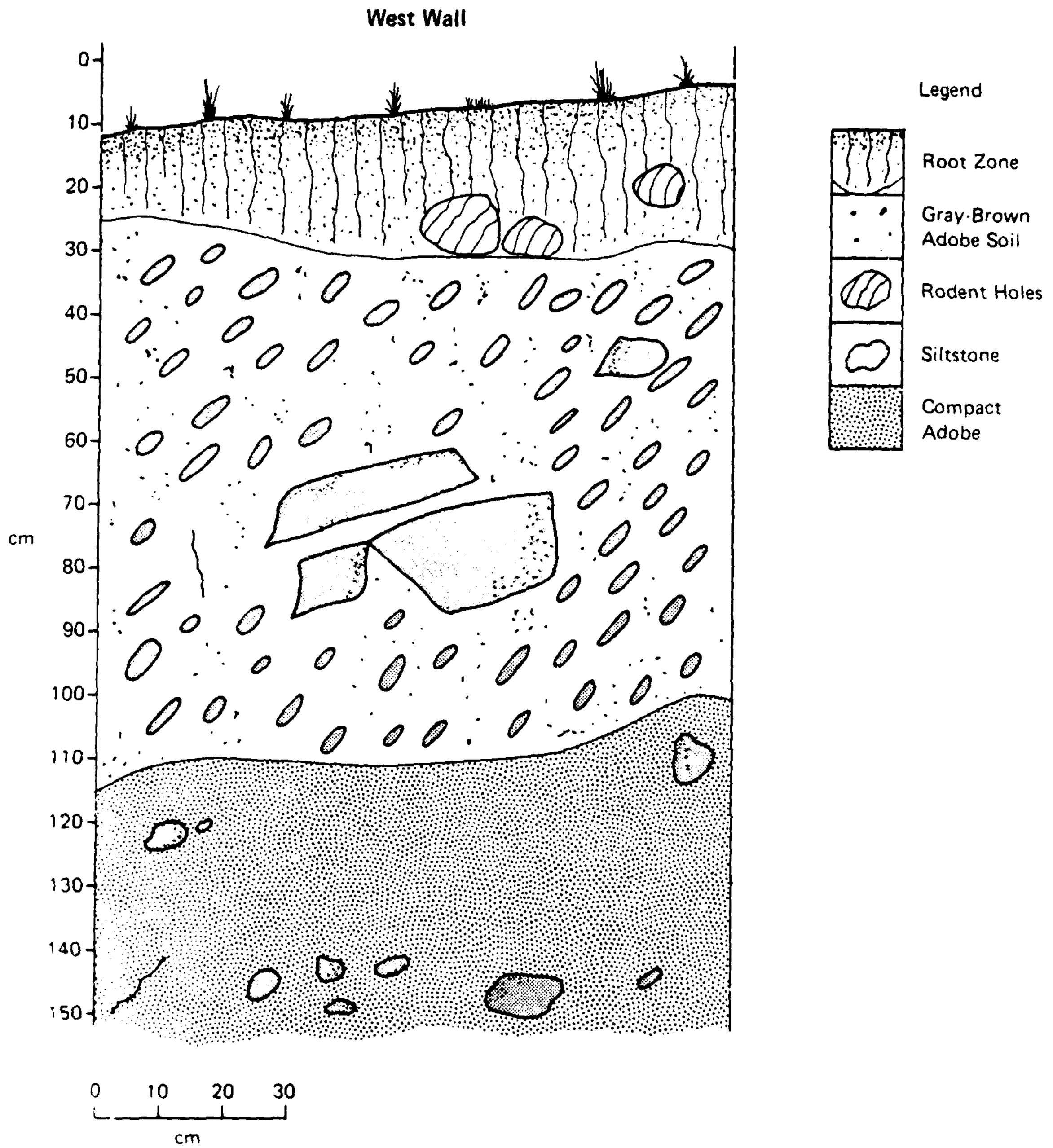
WHITE POINT STP SUMMARY: CA-LAn-1269

	Stratigraphy									Cultural Materials			
STP	Fill	Disced	Adobe/ Loam	Adobe	Lt. Brown Loam	Transition	Shale	Caliche	Bedrock Soil	Shell	Bone	Lithic	Historic
80S/300W	0-60	0-20	---	60-90	---	---	---	---	90+	0-90	---	---	0-80
100S/280W	0-60	0-15	---	60-90	---	---	---	---	90+	0-90	---	60-80	0-80
80S/280W	---	0-25	---	0-90	---	---	---	---	90+	60-90	---	0-90	0-40
100S/240W	---	0-25	---	0-80	---	---	0-70	---	80+	0-80	---	20-40	0-80
120S/220W	---	0-10	---	30-87	0-30	---	---	---	87+	0-87	---	---	0-80
120S/200W	---	0-25	---	0-80	---	---	---	---	80+	20-80	---	---	0-80
0N/120W	---	0-15	0-40	40-90	---	---	---	40-70	90+	20-40	---	---	---
40N/120W	---	0-15	---	0-90	---	---	---	---	90+	0-80	0-40	---	0-40
80N/120W	---	0-20	0-90	---	---	---	---	---	90+	0-90	---	---	0-40
120S/100W	---	0-20	0-37	---	---	---	0-37	---	---	---	---	---	37
0N/100W	---	0-20	0-40	40-90	---	---	---	---	---	0-60	---	0-40	0-20
160S/80W	---	0-20	0-36	36-90	---	---	---	---	90+	0-90	---	---	60-80
120S/80W	---	0-20	---	0-90	---	---	---	---	90+	0-60	---	0-20	0-40
100S/80W	---	0-20	0-50	50-90	---	---	---	---	90+	0-90	---	---	0-40
0N/80W	---	0-20	---	---	0-90	---	---	---	90+	0-40	---	---	0-60
0N/60W	---	0-15	---	---	0-80	---	0-40	80	80+	0-60	---	---	40-60
100S/40W	---	0-20	0-70	70-90	---	---	---	---	90+	40-90	---	20-90	0-60
0N/40W	0-15	0-15	15-60	---	---	60-80	0-40	60	80+	0-80	---	---	0-20
0N/20W	---	0-20	---	---	0-56	56-70	0-65	---	70+	0-40	---	0-20	---
20N/20W	---	0-20	0-80	---	---	---	60-80	---	80+	0-20	---	---	---
170S/10W	---	0-20	0-60	60-90	---	---	---	---	90+	20-80	---	---	0-60
140S/0W	---	0-20	0-90	---	---	---	---	---	90+	0-90	---	---	---
100S/0W	---	0-20	0-40	40-80	---	---	---	---	90+	20-90	---	---	0-90
80S/0W	---	0-10	0-60	---	---	60-80	---	60-80	90+	0-90	---	---	0-40
60S/0W	---	0-10	0-90	---	---	---	0-90	---	90+	0-90	---	---	---
40S/0W	---	0-20	0-20	20-60	---	60-80	---	---	80+	0-90	---	0-20	---
20S/0W	---	0-20	0-90	---	---	---	---	---	90+	0-90	---	0-90	---
0N/0W	---	0-20	0-20	20-40	---	44-68	---	---	70+	0-70	---	0-60	---
20N/0W	---	0-30	0-87	---	---	---	50-87	---	87+	0-80	---	20-40	---
40N/0W	---	0-20	0-90	---	---	---	0-90	---	90+	0-90	40-60	---	0-20

Table 23 (Continued)

WHITE POINT STP SUMMARY: CA-LAn-1269

	Stratigraphy									Cultural Materials			
STP	Fill	Disced	Adobe/ Loam	Adobe	Lt. Brown Loam	Transition	Shale	Caliche	Bedrock Soil	Shell	Bone	Lithic	Historic
50N/0W		0-15	0-90	---	---	---	---	---	90+	0-90	20-40 80-90	0-90	---
0N/20E		0-10	10-90	---	---	---	---	---	90+	40-60	---	---	---
100S/40E	0-20	0-20	20-86	---	---	---	---	---	86+	0-20	---	---	0-40
0N/40E	- -	0-20	---	- -	0-90	---	0-20	---	90+	0-90	---	---	---
0N/60E	---	0-20	---	---	0-80	---	0-40	70-80	80+	0-80	---	---	---
100S/80E	---	0-20	---	0-90	---	---	---	50-90	90+	0-60	---	---	0-40
0N/80E	---	- -	0-20 40-75	20-40	---	70-85	0-20	---	85+	0-80	20-40	---	---
100S/120E	---	0-20	0-30	30-50	---	---	---	50-60	90+	0-60	---	-	0-40
100S/160S	- -	0-20	0-60	60-85	---	75-85	---	---	85+	60-85	---	---	0-40
"X"	---	0-20	0-30	---	30-90	---	---	---	90+	0-90	---	---	0-90
"Y"	---	0-30	---	30-90	---	---	---	---	90+	0-90	---	---	0-20



CA-LAn-1269 Unit 20S/9E

FIGURE 15

The second specimen (#9-42) is a chert core fragment displaying one bifacially worked edge. Alternating flake scars are visible along this margin with negative flake scars visible on each face. A section of intact cortex remains adjacent to this edge. The opposite lateral margin is nearly perpendicular to the two faces and does not feature any flake scars. Numerous crenulations, spalls, and fractures indicate exposure to extreme heat. The core measures 8.4 x 5.0 x 2.3 cm and weighs 115.0 g. It was found in the 0-20 cm level of STP 20N/0W.

Modified Flakes. Two use-modified flakes and one retouched/use-modified flake were found during test excavations at CA-LAn1269 (Table 24). One of the three flakes was originally detached, by soft-hammer percussion, from a heat-treated chert nodule/core. Use-wear on the feathered distal margin is evidenced by a continuous series of small flake scars.

A minimally use-modified flake was recovered in the 30-40 cm level of unit 10N/1W and also appears to have been derived from a heat-treated chert nodule/core. The specimen seems to be a fragment of angular waste or shatter, and displays an edge that tapers to a thin, feathered margin. A series of small flake scars occurs along the edge for a distance of 2.5 cm. A large fracture interrupts this flaked edge but the break does not appear to reflect use-related damage.

Finally, a large, modified cherty shale flake was found in test unit 10N/1W at a depth of 40-50 cm. It is tabular in shape and has some cortical remnants on the platform. A flake was horizontally removed from the margin opposite the platform, producing an edge angle of 60°. Use-wear along this margin is indicated by small flake scars visible on both sides of the edge. A series of longer flake scars is also present on the dorsal face. This flake appears to have been used in both a cutting-sawing and a scraping manner.

Debitage. Thirty-seven unmodified flakes and 28 pieces of chipped stone angular waste were collected during test excavations at CA-LAn-1269. Metric attribute data are presented in Appendix B and graphically illustrated in Figure 16. Stratigraphic distributions are summarized, by frequency and weight, in Tables 25 through 28. The 37 flakes consist of 32 (86%) whole and 5 (14%) fragmentary specimens. All but 1 (cherty shale) of the flakes (97%) is made of local Monterey chert. Of the flakes, only 4 (11%) are secondary, the remaining 33 (89%) are interior. No primary cortical flakes were found. Thirty-three (89%) of the flakes exhibit patterned dorsal flake scars. Nine (24%) are classified as retouch flakes, 11 (27%) as biface reduction flakes, and 18 (49%) exhibit traits common to core reduction flakes.

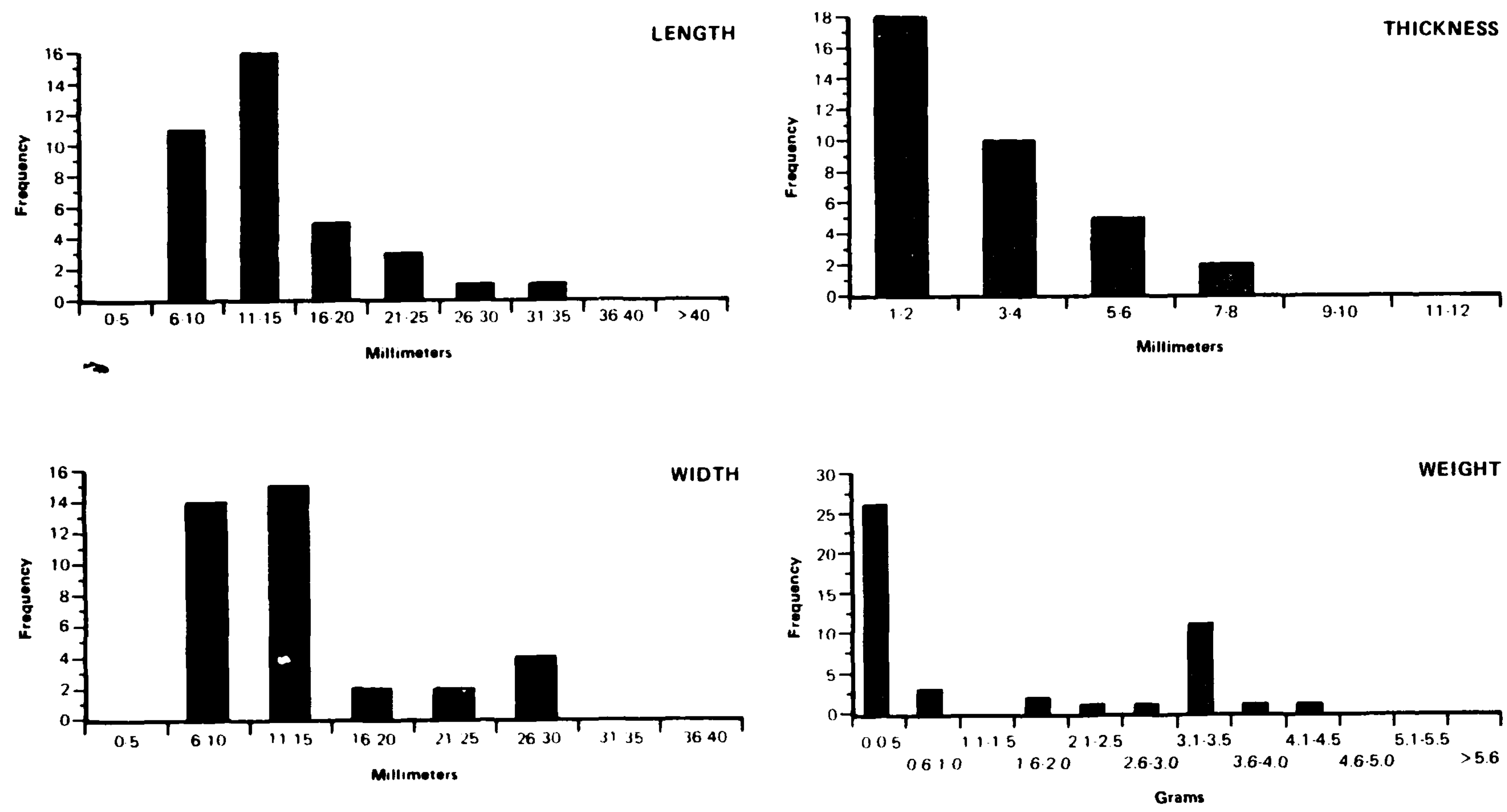
As at other archaeological sites in the area, soft-hammer percussion was the primary technique used in flake production. Thirty (81%) of the flakes may be classified as soft-hammer. Twenty (54%) of the flakes from CA-LAn-1269 have feathered terminations, 15 (41%) have step terminations, and two (5%) have hinge terminations. If not a result of sampling error, the increased occurrence of feathered terminations relative to LAn-291 may indicate that knapping techniques were more controlled at CA-LAn-1269. In contrast, nine (24%) of the flakes were struck off heat-treated cores. This is a much lower percentage than in the LAn-291 debitage assemblage.

A minimally altered piece of chipped stone material was recovered from test unit 10N/1W in the 40-50 cm level. Probably jasper, the object measures 4.8 x 3.1 x 2.0 cm

Table 24

METRIC ATTRIBUTE FOR MODIFIED FLAKES FROM CA-LAn-1269

Catalogue #	Prove-menence	Depth (cm)	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)	Use Modified	Retouched	Material
9-68	50N/0W	0-20	2.5	1.9	0.5	[illegible]	•	-	Chert
9-231	10N/1W	30-40	5.6	2.5	0.8	8.7	•	-	Chert
9-237	10N/1W	40-50	5.5	8.1	1.7	69.0	•	•	Cherty Shale



Histograms of Flake Attribute Data, CA-LAn-1269

FIGURE 16

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Table 25

STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE IN UNIT 0N/10E AT CA-LAn-1269*

Depth (cm)	Frequency: Flakes	Frequency: Angular Waste	Weight (g) Flakes
0-10	-	-	-
10-20	-	-	-
20-30	-	-	-
30-40	1	-	3.3
40-50	-	-	-
50-60	-	1	-
Total	1	1	3.3

Table 26

STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE IN UNIT 10N/1W AT CA-LAn-1269*

Depth (cm)	Frequency: Flakes	Frequency: Angular Waste	Weight (g) Flakes
0-10	-	-	-
10-20	-	1	-
20-30	4	1	9.3
30-40	2	-	0.8
40-50	6	6	7.6
50-60	2	2	2.5
60-70	1	2	0.5
70-80	1	2	0.1
80-90	-	-	-
90-100	-	4	-
100-110	-	1	0.2
110-120	-	-	-
Total	17	18	21.0

*Material: chert and cherty shale

Table 27

STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE IN UNIT 20S/9E AT CA-LAn-1269*

Depth (cm)	Frequency Flakes	Frequency Angular Waste	Weight (g) Flakes
0-20	5	1-	1.6
20-30	2	-	0.8
30-40	1	-	0.2
40-50	-	-	-
50-60	1	-	0.4
60-70	-	-	-
70-80	-	-	-
80-130	-	-	-
130-150	-	-	-
Total	9	-	3.0

*Material: chert and cherty shale

Table 28

STP STRATIGRAPHIC DISTRIBUTION OF FLAKES AND ANGULAR WASTE AT CA-LAn-1269*

Frequency (weight [g])

STP	Item	Depth (cm) 0-20	20-40	40-60	60-80	80-100	Total
0N/0W	Flake	-	-	-	-	-	-
	Angular Waste	1	-	-	-	1	2
0N/20W	Flake	2 (0.9)	1 (0.2)	-	-	-	3 (1.1)
	Angular Waste	1	-	-	-	-	1
20N/0W	Flake	-	-	-	-	-	-
	Angular Waste	2	-	-	-	-	2
40N/0W	Flake	-	-	-	-	-	-
	Angular Waste	-	1	-	-	-	1
50N/0W	Flake	-	-	1 (0.1)	1 (0.3)	-	2 (0.4)
	Angular Waste	-	-	-	-	-	-
20S/0W	Flake	1 (2.7)	1 (0.1)	-	1 (0.3)	-	3 (3.1)
	Angular Waste	-	-	-	-	-	-
40S/0W	Flake	1 (0.3)	-	-	-	-	1 (0.3)
	Angular Waste	-	-	-	-	-	-
80S/280W	Flake	-	-	-	-	-	-
	Angular Waste	-	-	-	-	1	1
100S/40W	Flake	-	-	1 (0.5)	-	-	1 (0.5)
	Angular Waste	-	-	-	-	-	-
100S/280W	Flake	-	-	-	1	-	1
	Angular Waste	-	-	-	-	-	-

*Material: chert and cherty shale; STPs lacking flakes or angular waste not listed.

and weighs 17.2 g. Faint traces of flake scarring are visible in two locations on an interior face while cortex covers the remaining surface. Since no other material of this kind was found at CA-LAn-1269, the object is suggestive of recently discussed prehistoric trade networks in the general region (Cottrell 1985; Koerper and Fife 1985).

Shell Bead

A fragment of a Mytilus shell disc bead was found in the 0-20 cm level of STP 80S/300W at CA-LAn-1269. Biconically drilled, the bead had been severely burned. The bead has an outside diameter of approximately 10.0 mm and is 1.0 mm thick. While considerably larger than the Mytilus disc beads recovered from humaliwo (Gibson 1975:112), it may be tentatively assigned to the Late Period.

Steatite Pendant

A fragment of a steatite pendant (Figure 13A) was located on the surface at CA-LAn-1269. Measuring 2.3 x 1.1 x 0.7 cm (maximum dimensions), with a weight of 1.5 g, the fragment is of an elongated, tear-drop shape. The pendant fractured diagonally across a biconically-drilled hole. Several striations are present on the margins of the pendant, and the entire fragment is polished. No temporally diagnostic features are present on the artifact. The pendant may have been imported from Santa Catalina Island (cf. Wlodarski 1979), and was most likely a valued or, perhaps, curated item.

Faunal Remains

Animal bone. The stratigraphic distribution of faunal remains recovered during the test excavation at CA-LAn-1269 are summarized by element frequencies and weight in Tables 29 through 31. Identified elements in the faunal assemblage include those of three terrestrial mammal species: pocket gopher (Thomomys bottae), California ground squirrel (Spermophilus beecheyi), and cottontail rabbit (Sylvilagus sp.). It seems that the remains of these animals do not represent prehistoric subsistence activities. None of the elements exhibit characteristics commonly attributed to food preparation (e.g., burning or patterned fracturing).

Skeletal remains of avian and aquatic animals were also recovered from CA-LAn-1269. These include bones of an unidentified bird species, a single centrum from either a shark or a ray, and a pharyngeal plate from a California sheephead (Pimelometopon pulchrum).

A total of 7 g of unidentifiable faunal remains was collected during the excavation at CA-LAn-1269. Two grams were classified as small mammal, with the remainder attributed to large mammals. Approximately half of the elements in each of these categories were burnt or charred. This condition is generally indicative of subsistence activities.

Shellfish. When compared to CA-LAn-105 and -291, a large sample of shellfish remains (over 4100 g) was obtained during excavations at CA-LAn-1269. Stratigraphic distribution, based on frequency and weight, is summarized in Tables 32 through 36 and discussed below.

Table 29

STRATIGRAPHIC DISTRIBUTION OF ANIMAL BONE IN UNIT 10N/1W AT CA-LAn-1269

	Genus/Species									
	Thomomys bottae		Fish Sheephead		Unidentified Bird		Unidentified Small Mammal		Unidentified Large Mammal	
Depth (cm)	Frequency	Weight (g)	Frequency	Weight (g)	Frequency	Weight (g)	Frequency	Weight (g)	Frequency	Weight (g)
20-30	-	-	-	-	1	0.5	-	-	5	3.0
30-40	-	-	-	-	-	-	-	-	-	-
40-50	-	-	-	-	-	-	-	-	-	-
50-60	-	-	1	0.5	-	-	-	-	-	-
60-70	-	-	-	-	-	-	-	-	-	-
70-80	-	-	-	-	-	-	2	1.0	-	-
80-90	1	1.0	-	-	-	-	-	-	-	-
90-100	-	-	-	-	-	-	-	-	-	-
100-110	2	1.5	-	-	-	-	-	-	-	-
110-120	1	1.0	-	-	-	-	-	-	-	-
Totals	4	3.5	1	0.5	1	0.5	2	1.0	5	3.0

Table 30

STRATIGRAPHIC DISTRIBUTION OF ANIMAL BONE
IN UNIT 20S/9E AT CA-LAn-1269

Depth (cm)	Unindentified Large Mammal Frequency	Unindentified Large Mammal Weight (g)	Unidentified Bird Frequency	Unidentified Bird Weight (g)	Sylvilagus Sp. Frequency	Sylvilagus Sp. Weight (g)
30-40	3	1.0	--	--	--	--
130-150	--	--	1	0.5	1	1.0
Totals	3	1.0	1	0.5	1	1.0

Table 31

STP STRATIGRAPHIC DISTRIBUTION
OF ANIMAL BONE AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
20N/0W	Sylvilagus	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.1	-	-	-	0.1
40N/0W	Small Mammal	Frequency	-	-	2	-	-	2
		Weight (g)	-	-	1.0	-	-	1.0
40N/120W	Spermophilus	Frequency	2	1	-	-	-	3
		Weight (g)	0.1	0.1	-	-	-	0.2
50N/0W	Ray/Shark	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.1	-	-	-	0.1
	Large Mammal	Frequency	-	-	-	2	-	2
		Weight (g)	-	-	-	1.0	-	1.0

*STPs lacking animal bone not listed.

Table 32

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 20S/9E AT CA-LAn-1269

Depth	Genera									
	Haliotis		Mytilus		Tegula		Chione		Pecten	
(cm)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)
0-20	1	19.7	29	26.6	9	21.0	—	1.0	2	4.4
20-30	--	1.5	26	24.4	11	15.8	—	--	1	3.4
30-40	1	16.1	6	14.4	3	6.7	--	--	—	0.9
40-50	--	--	5	8.3	4	7.2	--	--	—	0.2
50-60	--	--	8	12.1	1	1.5	--	--	—	0.1
60-70	--	0.3	1	4.2	--	0.6	—	0.5	--	--
70-80	--	--	1	0.8	--	--		--	--	--
80-90	--	--	--	0.1	--	0.1	--	--	--	--
90-130	--	1.1	1	0.1	--	0.2	--	--	—	0.2
130-150	--	--	9	9.8	2	3.2	--	--	1	2.5
Total	2	38.7	86	100.8	30	56.3	—	1.5	4	11.2

Depth	Genera									
	Chiton		Acmaea		Laevecardium		Lottia		Astraea	
(cm)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)
0-20	5	23.3	--	--	--	--	—	1.5	—	1.2
20-30	4	12.3	3	0.3	--	--	--	--	--	--
30-40	1	2.2	--	--	--	--	--	--	--	--
40-50	2	2.3	1	0.1	--	--	--	--	--	--
50-60	--	--	--	--	--	--	1	0.2	--	--
60-70	--	1.5	--	--	--	--	—	0.3	--	--
70-80	--	--	--	--	--	--	--	--	--	--
80-90	--	--	--	--	--	--	--	--	--	--
90-130	1	0.9	--	--	--	--	--	--	--	--
130-150	--	4.9	--	0.1	--	--	--	0.7	--	--
Total	13	47.4	4	0.5	--	--	1	2.7	—	1.2

*Frequency of whole shells, hinges, and spires

Table 32 (Continued)

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 20S/9E AT CA-LAn-1269

Depth	Genera					
	Ostrea		Balanus		Unidentified	
(cm)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)
0-20	--	--	--	--	--	70.8
20-30	1	0.5	1	0.2	--	24.3
30-40	--	--	--	--	--	6.7
40-50	--	--	--	--	--	9.6
50-60	1	0.2	--	--	--	5.1
60-70	--	--	--	--	--	1.9
70-80	--	--	--	--	--	0.5
80-90	--	--	--	--	--	1.5
90-130	--	--	--	--	3.1	--
130-150	--	--	--	--	--	5.9
Total	2	0.7	1	0.2	--	129.4

*Frequency of whole shells, hinges, and spires

Table 33

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 10N/1W AT CA-LAn-1269

Depth (cm)	Haliotis Frequency*	Haliotis Weight (g)	Mytilus Frequency*	Mytilus Weight (g)	Tegula Frequency*	Tegula Weight (g)	Chione Frequency*	Chione Weight (g)	Pecten Frequency*	Pecten Weight (g)
0-10	--	--	2	1.4	-	[illegible]			[illegible]	[illegible]
10-20	--	9.7	11	11.5		0.7	[illegible]	0.5	1	1.4
20-30	3	33.3	49	81.0	6	25.7	[illegible]	0.6	2	10.5
30-40	--	15.8	34	76.8	7	25.8			3	4.0
40-50	1	27.1	71	143.5	15	44.1	2	4.5	3	7.0
50-60	--	70.7	74	156.4	7	43.3	[illegible]	1.8	2	5.5
60-70	1	16.2	26	34.5	9	12.6	2	2.5	4	3.4
70-80	2	6.8	23	28.4	3	7.4			1	0.1
80-90	--	3.2	24	32.0	2	4.0				0.1
90-100	1	2.0	17	20.4	2	3.5			1	0.6
100-110	1	7.1	21	35.4	6	10.6			2	4.1
110-120	--	7.1	8	15.0	1	2.9			1	1.3
Total	9	19.9	360	636.1	58	179.7	4	9.9	20	38.2

Depth (cm)	Chiton Frequency*	Chiton Weight (g)	Acmaea Frequency*	Acmaea Weight (g)	Laevicardium Frequency*	Laevicardium Weight (g)	Lottia Frequency*	Lottia Weight (g)	Astraea Frequency*	Astraea Weight (g)
0-10	1	1.4	--	[illegible]						
10-20	2	12.7	--	--						
20-30	18	91.5	6	1.7		1.6	1	[illegible]	1	4.9
30-40	19	62.6	8	1.5		0.8	1	[illegible]		
40-50	38	126.1	12	2.0		1.7	1	0.4	[illegible]	[illegible]
50-60	36	143.3	12	2.1			[illegible]	[illegible]	[illegible]	[illegible]
60-70	8	20.4	3	0.1				0.1		
70-80	5	9.8	4	0.3				0.1		
80-90	3	9.6	2	0.1				[illegible]		
90-100	6	12.6	2	0.1		0.1				
100-110	3	19.4	1	0.1				[illegible]		
110-120	3	8.4	2	0.2				[illegible]		
Total	142	517.8	52	8.2		[illegible]		[illegible]		

*Frequency of whole shells, hinges and spines

Table [illegible] (continued)

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS [illegible]

Depth (cm)	Cypraea Frequency*	Cypraea Weight (g)	Tetrachita Frequency*	Tetrachita Weight (g)	Narrisia Frequency*	Narrisia Weight (g)	Macoma Frequency*	Macoma Weight (g)	Fissurella Frequency*	Fissurella Weight (g)
0-10	--	--	--							
10-20	--	--	-							
20-30	1	4.9	--	0.9		1.3				
30-40	1	10.8	--	2.5				1.0		
40-50	--	--		0.9		0.4		1.9	1	0.1
50-60	--	--						2.1		
60-70	--	--		0.1						
70-80	--	--		0.1						
80-90	--	--	--							
90-100	--	--	--	--		0.2		1.3		
100-110	--	--	-	1.0						
110-120	--	--	--	0.1				0.1		
Total	2	15.7	--	5.6		1.9		6.4	1	0.1

Depth (cm)	Crucibulum Frequency*	Crucibulum Weight (g)	Tagelus Frequency*	Tagelus Weight (g)	Olivella Frequency*	Olivella Weight (g)	Chthalamus Frequency*	Chthalamus Weight (g)	Balanus Frequency*	Balanus Weight (g)
0-10	--	--	--	--	--	--	--	--	--	-
10-20	--	--	--	--	--	--	-	--	--	0.4
20-30	--	--	--	--	--	--	--	--	--	0.4
30-40	--	--	--	--	--	--	--	--	--	3.5
40-50	2	0.8	--	--	--	--	--	--	--	--
50-60	--	--	2	1.3	1	0.2	1	0.1	2	0.4
60-70	--	--	--	--	--	--	--	--	--	--
70-80	--	0.1	--	--	--	--	--	--	--	--
80-90	-	--	--	--	--	--	--	--	--	--
90-100	--	--	--	--	--	--	--	--	--	0.7
100-110	-	--	--	--	--	--	--	--	1	2.4
110-120	-	--	--	--	--	--	--	--	1	1.4
Total	2	0.9	2	1.3	1	0.2	1	0.1	2	9.2

* [illegible] of whole shells, hinges and spines

AD-A176 120 ARCHAEOLOGICAL TEST EXCAVATIONS AT CA-LAN-105 -291 AND -1269 PALOS VERDES..(U) WESTEC SERVICES INC SAN DIEGO CA T G COOLEY ET AL. AUG 86 DACA09-85-D-0065 2/2

UNCLASSIFIED F/G 5/6 NL

END
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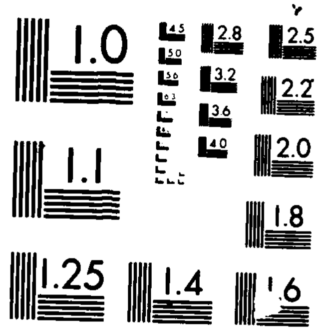
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1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0

Table 33 (Continued)

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 10N/1W AT CA-LAn-1269

Depth (cm)	Genera: Strongylocentrotus Frequency*	Strongylocentrotus Weight (g)	Unidentified Frequency*	Unidentified Weight (g)	Total Weight	Total MNI
0-10	--	--	--	2.4	5.2	2
10-20	--	--	--	8.1	45.0	11
20-30	--	0.2	--	74.2	334.4	71
30-40	--	0.3	--	140.7	346.8	54
40-50	--	0.2	--	135.7	500.3	112
50-60	--	--	--	135.3	571.3	106
60-70	--	--	--	16.9	107.0	46
70-80	--	--	--	25.8	79.2	33
80-90	--	0.1	--	39.6	89.0	28
90-100	--	--	--	26.7	68.2	23
100-110	--	0.1	--	54.3	135.6	32
110-120	--	--	--	13.5	49.8	13
	--	--	--	+ Crab claws	--	--
	--	--	--	30-40	0.3	--
	--	--	--	50-60	0.1	--
Total	--	0.9	--	673.2	2331.8	531

*Frequency of whole shells, hinges and spines

Table 34

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS
IN UNIT 0N/10E AT CA-LAn-1269

Genus/Species	Quantity*	Depth (cm) 20-30	30-40	40-50	50-60	Total
Haliotis	Frequency	-	-	-	-	-
	Weight (g)	1.0	3.6	1.2	2.5	8.6
Mytilus	Frequency	7	27	13	8	55
	Weight (g)	11.2	14.6	10.5	6.8	43.1
Tegula	Frequency	1	2	3	-	6
	Weight (g)	2.2	5.3	8.1	0.6	16.2
Chione	Frequency	-	-	-	-	-
	Weight (g)	-	-	-	-	-
Pecten	Frequency	-	3	-	-	3
	Weight (g)	0.3	2.2	0.1	-	2.6
Chiton	Frequency	1	3	1	-	4
	Weight (g)	2.9	13.6	4.1	5.4	26.0
Acmaea	Frequency	-	-	-	-	-
	Weight (g)	-	-	-	0.4	0.4
Laevecardium elatum	Frequency	-	-	-	-	-
	Weight (g)	-	1.0	-	-	1.0
Lottia gigantia	Frequency	-	-	-	-	-
	Weight (g)	-	2.2	1.3	0.8	4.3
Astraea undosa	Frequency	1	-	1	-	2
	Weight (g)	4.1	2.3	9.2	1.7	17.3
Cypraea	Frequency	-	-	-	-	-
	Weight (g)	-	-	-	-	-
Tetraclita	Frequency	-	-	-	-	-
	Weight (g)	-	0.7	0.1	-	0.8
Crucibulum	Frequency	1	-	-	-	1
	Weight (g)	0.1	-	-	-	0.1
Ocenebua	Frequency	-	-	-	-	-
	Weight (g)	-	-	-	-	-
Norrisia	Frequency	-	-	-	-	-
	Weight (g)	-	-	-	-	-

Table 34 (Continued)

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS
IN UNIT 0N/10E AT CA-LAn-1269

Genus/Species	Quantity*	Depth (cm) 20-30	30-40	40-50	50-60	Total
Ostrea	Frequency	-	-	-	-	-
	Weight (g)	-	-	-	-	-
Balanus	Frequency	-	-	-	-	-
	Weight (g)	0.2	-	-	-	0.2
Strongylocentrotus	Frequency	-	-	-	-	-
	Weight (g)	-	0.1	-	-	0.1
Olivella	Frequency	-	-	-	-	-
	Weight (g)	-	-	-	0.1	0.1
Unidentified	Frequency	-	-	-	-	-
	Weight (g)	7.0	36.4	33.5	8.8	85.7

*Frequency given for whole, hinge, and spires only.

Table 35

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 0N/10E AT CA-LAn-1269

Depth (cm)	Haliotis Frequency*	Haliotis Weight (g)	Mytilus Frequency*	Mytilus Weight (g)	Tegula Frequency*	Tegula Weight (g)	Chione Frequency*	Chione Weight (g)	Pecten Frequency*	Pecten Weight (g)
20-30	--	1.0	7	11.2	1	2.2	--	--	--	0.3
30-40	--	3.6	27	14.6	2	5.3	--	--	3	2.2
40-50	--	1.2	13	10.5	3	8.1	--	--	--	0.1
50-60	--	2.5	8	6.8	--	0.6	--	--	--	--
Total	--	8.6	55	43.1	6	16.2	--	--	3	2.6

Depth (cm)	Chiton Frequency*	Chiton Weight (g)	Acmaea Frequency*	Acmaea Weight (g)	Laevicardium Frequency*	Laevicardium Weight (g)	Lottia Frequency*	Lottia Weight (g)	Astraea Frequency*	Astraea Weight (g)
20-30	1	2.9	--	--	--	--	--	--	1	4.1
30-40	3	13.6	--	--	--	1.0	--	2.2	--	2.3
40-50	1	4.1	--	--	--	--	--	1.3	1	9.2
50-60	--	5.4	--	0.4	--	--	--	0.8	--	1.7
Total	4	26.0	--	0.4	--	1.0	--	4.3	2	17.3

Depth (cm)	Cypraea Frequency*	Cypraea Weight (g)	Tetraclita Frequency*	Tetraclita Weight (g)	Crucibulum Frequency*	Crucibulum Weight (g)	Ocenebra Frequency*	Ocenebra Weight (g)	Norrisia Frequency*	Norrisia Weight (g)
20-30	--	--	--	--	1	0.1	--	--	--	--
30-40	--	--	--	0.7	--	--	--	--	--	--
40-50	--	--	--	0.1	--	--	--	--	--	--
50-60	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	0.8	1	0.1	--	--	--	--

*Frequency of whole shells, hinges, and spires

Table 35 (Continued)

STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS IN UNIT 0N/10E AT CA-LAn-1269

Depth (cm)	Genera									
	Ostrea		Balanus		Strongylocentrotus		Olivella		Unidentified	
	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)	Frequency*	Weight (g)
20-30	--	--	--	0.2	--	--	--	--	--	7.0
30-40	--	--	--	--	--	0.1	--	--	--	36.4
40-50	--	--	--	--	--	--	--	--	--	33.5
50-60	--	--	--	--	--	--	--	0.1	--	8.8
Total	--	--	--	0.2	--	0.1	--	0.1	--	85.7

*Frequency of whole shells, hinges, and spires

Table 36

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
0N/0W	*Mytilus*	Frequency	4	2	2	-	-	8
		Weight (g)	0.1	3.1	4.0	0.5	-	7.7
	Tegula	Frequency	-	1	1	1	-	3
		Weight (g)	-	1.0	1.0	0.1	-	2.1
	Acmaea	Frequency	1	-	1	-	-	2
		Weight (g)	0.1	-	0.1	-	-	0.2
	Chiton	Frequency	-	1	-	-	-	1
		Weight (g)	-	1.0	0.6	-	-	1.6
	Balanus	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	0.7	-	-	0.7
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	2.0	3.5	3.0	2.2	-	10.7
0N/20W	*Mytilus*	Frequency	-	-	-	-	-	-
		Weight (g)	0.2	-	-	-	-	0.2
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
0N/40W	*Mytilus*	Frequency	2	-	-	-	-	2
		Weight (g)	2.6	-	-	-	-	2.6
	Haloitis	Frequency	-	-	-	-	-	-
		Weight (g)	1.8	-	-	-	-	1.8
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	0.9	-	-	-	-	0.9
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	0.7	-	-	-	-	0.7
	Lottia	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	-	-	-	-	0.3
	Balanus	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	-	-	-
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.4	-	-	-	0.4

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.7	0.3	0.4	-	-	1.4
0N/60W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.3	-	-	0.3
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.0	-	-	-	1.0
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	0.4	0.1	-	-	-	0.5
	Unidentified	Frequency	-	-	-	-	-	-
		Weight	0.6	0.9	0.3	-	-	1.8
0N/80W	Tegula	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	0.4	-	-	-	0.7
0N/100W	Mytilus	Frequency	1	-	-	-	-	1
		Weight (g)	0.7	-	0.3	-	-	1.0
	Donax	Frequency	1	-	-	-	-	1
		Weight (g)	0.3	-	-	-	-	0.3
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	1.3	1.0	-	-	-	2.3
0N/120W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
20N/0W	Mytilus	Frequency	59	38	13	1	0	111
		Weight (g)	73.0	51.2	17.7	2.2	-	144.1
	Haliotis	Frequency	-	1	-	-	-	1
		Weight (g)	9.1	21.9	2.4	-	-	33.4
	Pecten	Frequency	4	3	-	-	-	7
		Weight (g)	9.9	3.7	0.4	0.4	-	14.4
	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	1.7	-	-	-	-	1.7
	Tegula	Frequency	-	4	-	-	-	4
		Weight (g)	-	10.6	2.5	0.1	-	13.2

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Chiton	Frequency	18	6	1	-	-	24
		Weight (g)	50.4	22.5	7.6	0.9	-	81.4
	Lottia	Frequency	-	1	-	-	-	1
		Weight (g)	3.3	2.9	-	-	-	6.2
	Ostrea	Frequency	1	1	-	-	-	2
		Weight (g)	0.3	0.5	-	-	-	0.8
	Acmaea	Frequency	-	2	-	-	-	2
		Weight (g)	-	0.2	0.3	-	-	0.5
	Strongylo-centrotus	Frequency	-	-	-	-	-	-
		Weight (g)	0.5	0.1	-	-	-	0.6
	Balanus	Frequency	-	-	-	-	-	-
		Weight (g)	3.3	0.8	0.2	-	-	4.3
	Tetraclita	Frequency	-	-	-	-	-	-
		Weight (g)	1.8	-	-	-	-	1.8
	Cerithidea	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.4	-	-	-	0.4
	Fissurella	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.3	-	-	-	0.3
	Astraea	Frequency	-	-	-	-	-	-
		Weight (g)	1.9	-	-	-	-	1.9
	Crucibulum	Frequency	-	-	-	-	-	-
		Weight	-	-	0.1	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	105.9	50.4	16.2	0.2	-	172.7
20N/20W	_Chione_	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	-	-	-	-	0.3
40N/0W	_Mytilus_	Frequency	-	18	6	19	-	43
		Weight (g)	1.1	33.5	17.2	38.0	-	88.8
	Haliotis	Frequency	-	-	-	1	-	1
		Weight (g)	-	11.8	20.1	11.3	-	43.2
	Pecten	Frequency	1	3	2	-	-	6
		Weight (g)	0.8	8.4	5.0	1.7	-	15.9

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Chione	Frequency	-	3	-	-	-	3
		Weight (g)	-	19.1	1.3	3.5	-	23.9
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.4	2.4	2.6	-	6.4
	Chiton	Frequency	-	-	-	6	-	6
		Weight (g)	0.2	-	4.5	16.8	-	21.5
	Lottia	Frequency	-	-	-	1	-	1
		Weight (g)	-	3.0	-	1.6	-	4.6
	Acmaea	Frequency	-	-	1	1	-	2
		Weight (g)	-	-	0.1	0.2	-	0.3
	Strongylo-centrotus	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Balanus	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.0	1.1	0.6	-	2.7
	Astraea	Frequency	-	1	-	-	-	1
		Weight (g)	-	6.7	-	-	-	6.7
	Laevecardium	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.0	-	-	-	1.0
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	1.8	42.4	16.5	39.6	-	100.3
40N/120W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	0.9	-	-	-	-	0.9
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	0.5	-	0.1	-	-	0.6
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	0.1	0.3	0.1	-	0.6
50N/0W	Mytilus	Frequency	1	4	8	14	-	27
		Weight (g)	1.2	6.2	12.7	32.3	-	57.4
	Haliotis	Frequency	-	-	-	-	-	-
		Weight (g)	-	2.5	-	-	-	2.5
	Pecten	Frequency	-	-	1	-	-	1
		Weight (g)	-	1.5	1.6	0.5	-	3.6

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	0.4	-	0.8	2.4	-	3.6
	Chiton	Frequency	1	-	-	1	-	2
		Weight (g)	0.2	0.7	4.2	6.5	-	11.6
	Lottia	Frequency	-	-	-	1	-	1
		Weight (g)	-	-	0.9	1.6	-	2.5
	Acmaea	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.2	-	-	0.2
	Balanus	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.4	0.5	2.5	-	3.4
	Laevecandium	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	4.5	1.8	-	6.3
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	2.6	6.1	14.4	11.8	-	34.9
80N/120W	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.8	0.1	0.2	0.2	0.2	1.5
STP "X"	*Mytilus*	Frequency	-	-	1	1	-	2
		Weight (g)-	-	0.5	0.1	0.1	0.7	1.4
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	0.1	0.1	0.1	0.4
STP "Y"	*Mytilus*	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.5	-	0.5
	Tegula	Frequency	1	-	-	-	-	1
		Weight (g)	0.1	-	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.8	0.1	0.4	0.3	0.1	1.7
0N/20E	Unidentified	Frequency	-	-	.	-	-	-
		Weight (g)	-	-	0.2	-	-	0.2
0N/40E	*Mytilus*	Frequency	1	-	-	-	-	1
		Weight (g)	1.1	-	1.7	-	-	2.8
	Haliotis	Frequency	-	-	-	-	-	-
		Weight (g)	-	2.0	-	-	-	2.0

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Tegula	Frequency	2	1	-	-	-	3
		Weight (g)	1.5	0.9	2.9	0.6	0.5	6.4
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.6	-	-	-	0.6
	Acmaea	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.2	-	-	-	0.2
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	0.5	2.4	0.3	0.5	4.0
0N/60E	Mytilus	Frequency	-	1	-	-	-	1
		Weight (g)	0.3	0.4	0.4	-	-	1.1
	Tegula	Frequency	-	2	-	-	-	2
		Weight (g)	0.3	2.8	0.5	1.1	-	4.7
	Conus	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.4	-	-	-	0.4
	Lottia	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.9	-	0.9
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	1.0	1.7	0.4	2.1	-	5.2
0N/80E	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.3	-	0.3
	Laevecardium	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.3	-	-	-	0.3
	Crucibulum	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	0.6	0.1	-	0.8
20S/0N	Mytilus	Frequency	4	14	12	10	-	40
		Weight (g)	7.2	9.9	12.5	6.2	-	35.8
	Haliotis	Frequency	1	-	-	-	-	1
		Weight (g)	0.7	0.5	2.0	-	-	3.2
	Tegula	Frequency	2	1	3	-	-	6
		Weight (g)	2.3	2.2	3.4	0.7	-	8.6

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.0	0.1	0.5	-	1.6
	Chiton	Frequency	2	1	1	1	-	5
		Weight (g)	6.2	4.7	0.9	1.1	-	12.9
	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.0	-	-	-	1.0
	Lottia	Frequency	-	-	-	-	-	-
		Weight (g)	-	2.1	-	-	-	2.1
	Tetraclita	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	10.0	16.3	21.2	8.6	-	56.1
40S/0W	*Mytilus*	Frequency	1	-	1	1	-	3
		Weight (g)	1.1	1.3	0.8	0.5	-	3.7
	Tegula	Frequency	1	-	-	-	-	1
		Weight (g)	0.2	-	0.2	-	-	0.4
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	0.8	-	-	-	-	0.8
	Ostrea	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.6	-	-	0.6
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	2.1	0.7	1.1	0.3	0.3	4.5
60S/0W	*Mytilus*	Frequency	1	-	1	2	-	4
		Weight (g)	0.5	-	1.0	1.6	1.1	4.2
	Tegula	Frequency	1	-	1	1	-	3
		Weight (g)	1.7	0.7	0.6	1.1	-	4.1
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.2	-	-	-	0.2
	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.6	-	-	-	0.6
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.4	0.6	0.6	0.5	-	2.1

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
80S/0W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.3	-	0.9	-	1.2
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	0.4	0.3	0.9	-	1.7
80S/280W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	-	0.5	0.5
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.2	-	0.2
80S/300W	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	-	-	-	-	0.3
	Crucibulum	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.4	0.2	0.2	0.1	0.9
100S/0W	Chiton	Frequency	-	-	-	-	1	1
		Weight (g)	-	-	-	-	0.3	0.3
	Crucibulum	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	-	0.2	0.2
100S/40W	Mytilus	Frequency	-	-	-	1	1	2
		Weight (g)	-	-	0.4	5.1	1.1	6.6
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	1.3	-	1.3
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.2	0.6	-	0.8
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.7	-	0.7
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.2	3.6	1.1	4.9
100S/80W	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	0.2	-	-	-	-	0.2

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Donax	Frequency	-	1	-	-	-	1
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	0.5	0.9	0.2	0.2	1.9
100S/240W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.3	-	-	-	0.3
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	0.6	-	0.1	-	0.8
100S/280W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.3	-	-	0.3
	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.4	-	-	-	0.4
	Tegula	Frequency	-	-	1	-	-	1
		Weight (g)	-	-	0.2	-	-	0.2
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.1	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	0.1	-	0.1	0.3
120S/80W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.3	-	-	0.3
120S/200W	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	-	-	-	0.1
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.1	0.1	0.3	-	0.5
120S/220W	Tegula	Frequency	1	-	-	-	-	1
		Weight (g)	0.1	-	-	0.2	-	0.3
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.7	-	-	0.2	0.4	1.3
140S/0W	Mytilus	Frequency	-	-	-	-	1	1
		Weight (g)	-	-	-	-	0.1	0.1

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.4	-	-	-	0.4
	Balanus	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	0.6	-	-	0.6
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	1.2	0.1	1.0	0.4	0.4	3.1
170S/10W	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	-	1.9	-	-	-	1.9
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	-	-	-	0.2	-	0.2
160S/180W	Mytilus	Frequency	-	-	-	2	-	2
		Weight (g)	-	0.7	-	0.3	-	1.0
	Tegula	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.2	0.4	1.1	-	0.7
	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	0.7	-	-	-	1.0
	Chione	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.3	-	-	-	0.3
	Chiton	Frequency	-	-	-	-	-	-
		Weight (g)	-	0.5	-	0.2	-	0.2
	Crucibulum	Frequency	1	2	-	-	-	3
		Weight (g)	0.1	0.1	-	-	-	0.2
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	1.9	3.1	1.5	3.3	1.6	11.4
100S/40E	Pecten	Frequency	-	-	-	-	-	-
		Weight (g)	0.2	-	-	-	-	0.2
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	-	-	-	0.1
100/60E	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.1	-	0.1	0.1	0	0.3
100S/120E	Mytilus	Frequency	-	-	-	-	-	-
		Weight (g)	0.3	-	-	-	-	0.3

Table 36 (Continued)

STP STRATIGRAPHIC DISTRIBUTION OF SHELLFISH REMAINS AT CA-LAn-1269*

STP	Genus	Quantity	0-20	20-40	40-60	60-80	80-100	Total
	Unidentified	Frequency	-	-	-	-	-	-
		Weight (g)	0.5	0.4	0.2	0	0	1.1

*STPs lacking shellfish remains not included.

In unit 20S/9E Mytilus shell was dominant throughout the deposit (Table 32). Chiton was equally well-represented in the upper 20 cm with Mytilus. Haliotis species comprised only two percent of the sample in the 20-30 cm level and increased in occurrence (34%) in the 30-40 cm level. Below 40 cm depth, Haliotis remains were virtually non-existent.

Mytilus shell was also dominant in unit 10N/1W, with chiton comparably represented in the upper levels but decreasing below 70 cm (Table 33). The amount of Haliotis in the upper 20 cm was only slightly less than that of Mytilus and chiton, but was minimal below 40 cm depth.

Mytilus, followed by chiton, were dominant by weight in unit 0N/10E (Table 34). Haliotis remains were minimally represented except in the basal level where slightly over half of the shell recovered was Haliotis.

The shellfish data indicate that Mytilus was the principal invertebrate food resource gathered during the prehistoric occupation of CA-LAn-1269. This may indicate the relative ease with which Mytilus colonies can be exploited in the intertidal zone along the nearby coast. Chiton was the second most dominant shellfish species found at the site, occurring in quantities similar to that of Mytilus in the upper levels of the two southernmost excavation units, but decreasing below the 50-70 cm level. The stratigraphic distribution of Haliotis remains may be notable. Assuming a reasonable degree of stratigraphic integrity in the area where the three 1 x 1 m units were located, it would appear that Haliotis was exploited primarily during later phases of prehistoric human occupation at CA-LAn-1269. Although clearly a possible consequence of sampling error, this pattern could reflect changes in the relative availability of shellfish species due to environmental factors. The distribution of the Haliotis may also indicate an over exploitation of local Mytilus and chiton colonies which required subsequent supplementary exploitation of Haliotis.

DISCUSSION AND RECOMMENDATIONS

Previous archaeological research in coastal southern California suggests a complex prehistoric record of episodes of demographic change, technological innovation, and sociocultural evolution spanning more than six millennia. In general, the record seems to indicate increasingly diversified and intensified cultural activities over time and space as evidenced by long-term trends toward population growth, greater sedentism, technoeconomic specialization, and increased sociopolitical complexity (Wallace 1955, 1978; Meighan 1959; Warren 1968; Hill 1985).

Two synthetic reconstructions of regional cultural history dominate the archaeological literature on coastal southern California. The initial sequence, proposed by Wallace (1955) as a primarily classificatory device, consists of four broad horizons: Early Man, Milling Stone Assemblages, Intermediate Cultures, and Late Prehistoric Cultures. More recently, Warren (1968) proposed an alternative sequence comprised of "cultural traditions" taken to represent distinctive systems of adaptation: San Dieguito, Encinitas, Campbell, and Shoshonean (central coast)/Yuman (south coast). Warren (1968:12) considered the Chumash culture of north coastal southern California as an historic expression of the Campbell Tradition.

Although the two reconstructions were each formulated with different objectives in mind, both employ many of the same archeological indicators (i.e., material traits) to distinguish among the respective horizons and traditions (Koerper and Drover 1983; Cottrell et al. 1985). Consequently, in a relative sense, the two chronologies are quite comparable and absolute calendric differences can probably be attributed to the absence of radiometric dates at the time Wallace (1955) developed his sequence. What is apparent, however, is that aside from providing a gross, and still largely undemonstrated (cf. Cottrell et al. 1985:15-16) chronological ordering of certain archaeological materials in the general region, neither scheme can serve as a viable framework within which to explore diachronic processes of cultural evolution in prehistoric coastal southern California. This observation reflects the ongoing process of problem definition, experimental design and execution, and, ideally, problem resolution that will lead to a better understanding of the prehistoric record and reveal promising avenues for future research. The present study assesses the potential of the White Point/Bogdanovich Park archaeological resources to yield information valuable to this process.

Because of the rapid development within the Los Angeles Basin and the surrounding areas, particularly the Palos Verdes Peninsula, many important archaeological sites have been partially or completely destroyed. Since the area is not yet well-documented archaeologically, the problems identified for further investigation are obviously fairly basic ones. The research design we propose attempts to address as many of these problems as possible simultaneously, and involves four major areas of investigation. These include chronology, identification of past lifeways, establishment of the settlement-subsistence pattern, and the explication of culture change.

SUMMARY OF FINDINGS

Ninety shovel test pits and six 1 x 1 m controlled test units were excavated at CA-LAn-105, -291, and -1269. The material culture and faunal remains recovered suggest that additional archaeological investigation at each of these sites could yield data useful in addressing some of the outstanding research issues of the prehistory of the area.

Summaries of the lithic, bone, and shell remains recovered during the test excavation at Bogdanovich Park and White Point are presented in Tables 37 through 39. The site boundaries and high density areas depicted in Figures 3 and 14 are based primarily on shell remains and flakes recovered from STPs. The STPs at CA-LAn-105 produced very little shell. Only two of the STPs (ON/40E and 20S/80E) yielded over 1.0 g. Conversely, a number of STPs at CA-LAn-291 yielded over 1.0 g of shell and there are two areas of high shell density. These occur in the central and northeastern portions of the site. For the most part, flake concentrations coincide with the shell. It should be noted that, although the STPs in the southeast portion of LAn-291 produced low densities of shell, the materials from Unit ON/80W indicate a substantial deposit.

Similarly, most of the STPs at CA-LAn-1269 produced low densities of shell and flakes. With few exceptions, the high density area is located in the central and eastern portions of the site. Four of the STPs (20S/0W, 20N/0W, 40N/0W, and 50N/0W) produced well over 100 g of shell. This area also coincides with the higher flake frequencies.

The chipped stone assemblages from the three sites indicate a dependence on locally available raw materials - the various cherts, banded cherts, and cherty shales of the Monterey Formation. Chert and cherty shale, easily obtained from nearby outcrops, comprise 98 percent of the chipped stone tools and debitage recovered during test excavations (Table 37). Roughly one percent of the assemblage consists of modified siltstone. A minimally modified jasper nodule and a single obsidian flake were the only non-local chipped stone raw materials found during the investigation.

In terms of chipped stone technology, the tertiary stage of manufacturing was predominant as evidenced by the occurrence of mostly interior flakes and angular waste, and by the apparent reliance on soft-hammer percussion. Indications of primary flaking were almost non-existent, suggesting that initial reduction was accomplished elsewhere (presumably at local quarries). The few reworked or retouched artifacts recovered suggest some finishing or tool maintenance activities. Soft-hammer, and to a lesser extent, hard-hammer percussion were used in retouching. Judging from the nature of the chipped stone assemblages, a limited amount of pressure flaking was undertaken during prehistoric occupations of the three sites. Heat treatment of the silicious and shaley raw materials is apparent, although the specific objectives of such a preparatory stage remain unclear. Heat treatment may have been used to enhance separation of cherts from their cherty shale matrices (cf. Cooley 1982).

Nearly 5000 grams of shellfish remains were recovered during test excavations, with most (85%) collected at CA-LAn-1269 (Table 39). Mytilus, Haliotis, and chiton species were by weight the foremost exploited marine resource, although there is some variation in their representation in the shell assemblages from each site. Given the relatively small sample size, the dominance of Haliotis remains at CA-LAn-105 may be the result of sampling error. Between the other two sites, however, a significant difference in shellfish exploitation patterns is indicated. Whereas Mytilus shell represents nearly equal proportions of the assemblages from both CA-LAn-291 and CA-LAn-1269, Haliotis and chiton remains are, respectively, the second most well-represented shellfish at the two sites. This difference may reflect exploitation of

Table 37

GENERAL SUMMARY OF MATERIAL CULTURE ASSEMBLAGES*

Item	Quantity CA-LAn-105	CA-LAn-291	CA-LAn-1269	Total
Chipped Stone	-	-	-	-
Biface	-	6	1	7
Core	1	2	2	5
Modified Flake	2	5	3	10
Unmodified Flake (frequency)	7	132	37	176
Unmodified Flake (weight [g])	9.7	133.6	32.7	176
Angular Waste (frequency)	23	134	28	185
Ground Stone	-	-	-	-
Mortar	-	3	-	3
Pestle	-	2	-	2
Hammerstone	-	4	-	4
Scraper	-	1	-	1
Chopper	-	1	-	1
Shell Bead	-	2	1	3
Steatite Pendant	-	-	1	1

*Based on both STP and 1 x 1 m unit excavations.

Table 38

GENERAL SUMMARY OF ANIMAL BONE

Genus	Frequency			Weight (g)			Total	
	CA-LAn-105	CA-LAn-291	CA-LAn 1269	CA-LAn 105	CA-LAn 291	CA-LAn 1269	Frequency	Weight(g)
Large Mammal	1	8	10	2.0	10.0	5.0	19	17.0
Small Mammal	-	11	4	-	6.0	2.0	15	8.0
Cervus	1	-	-	1.0	-	-	1	1.0
Neotoma	-	2	-	-	2.0	-	2	2.0
Spermophilus	-	7	3	-	6.5	0.2	10	6.7
Thommys	-	1	4	-	1.0	3.5	5	4.5
Sylvilagus	-	-	2	-	-	1.1	2	1.1
Unidentified Fish	-	1	-	-	0.5	-	1	0.5
Ray or Shark	-	3	1	-	2.5	0.1	4	2.6
Sheephead	-	-	1	-	-	0.5	1	0.5
Unidentified Bird	-	-	2	-	-	1.0	2	1.0

Table 39

SHELLFISH SUMMARY

Genera	CA-LAn-105 Weight (grams)	CA-LAn-105 Number of Hinges or Spires	CA-LAn-291 Weight (grams)	CA-LAn-291 Number of Hinges or Spires	CA-LAn-1269 Weight (grams)	CA-LAn-1269 Number of Hinges or Spires
Mytilus	1.2	-	201.9	69	1,048.6	727
Haliotis	5.7	-	172.1	7	322.4	14
Tegula	0.8	-	47.1	17	325.7	187
Pecten	-	-	23.8	9	52.1	40
Chiton	-	-	8.7	4	732.1	202
Chione	0.2	-	15.2	6	21.1	4
Lottia gigantia	0.8	-	5.7	1	35.2	14
Unidentified	1.9	-	188.7	-	1,336.6	-
Others	-	-	138.0	7	229.0	111
TOTAL	10.6	-	801.2	120	4,102.8	1,299

different shellfish habitats or, possibly, a diachronic shift in subsistence procurement patterns. If the latter, and again assuming a degree of depositional integrity, the relative absence of Haliotis in the lower levels of the excavation units at CA-LAn-1269 might be used to speculate that the prehistoric occupation of CA-LAn-1269 may pre-date that of CA-LAn-291. Additional insight into diachronic patterns of shellfish exploitation in this area of the Palos Verdes Peninsula must await specific chronometric analyses and a more explicit consideration of local shellfish habitats. The comparatively greater representation of "other" shellfish species at CA-LAn-291 may suggest that the prehistoric occupants of this site gathered shellfish from habitats where these species occurred and were incidentally collected. These habitats were not as extensively exploited by the occupants of CA-LAn-1269. Finally, a number of the minor genera in the CA-LAn-1269 shellfish assemblage, including Norrissia, Cerithedea, Cypraea, Conus, and Olivella, are known to have been used for various non-food utilitarian and ornamental purposes (Ross 1970; Strudwick 1985). However, no shell fishhooks and few shell ornaments were found at the two sites (Table 39).

In the light of the data gathered, it is possible to classify the sites into two major categories, stressing at the outset that the site typology generated is only a tentative one, as it is based only on preliminary observation; it is anticipated that further research may require modification and/or elaboration. For this reason, we prefer at this time to make only basic and fairly simple distinctions between sites, using two defining criteria: (1) degree of permanent occupation, and (2) site function(s).

The first category comprises single-function sites, at which the performance of only one type of activity can be discerned; it is assumed that because of such limited activity and the generally small size of these sites that all single-function sites were temporary in nature. This category may be subdivided in terms of the activities inferred to have taken place at each site. Sites which contain mostly faunal remains, i.e., marine shell and animal bones, are classified as resource procurement or processing sites. Included in this category is CA-LAn-1269 (Eberhart-9).

With regard to the research issues of the area, CA-LAn-1269 is specifically well suited for the study of settlement and subsistence patterns. Currently, an obstacle to further research at sites within the Palos Verdes area in general and at sites CA-LAn-291 and -1269 specifically is the lack of a firm chronological framework. With more than 1200 recorded archaeological sites within Los Angeles County, only 59 have been excavated and only 18 of the excavated sites have reliable chronometric dates, i.e., radiocarbon dates or obsidian hydration determinations (Cottrell et al. 1985:9). Some sites were excavated prior to the advent, or at least the application, of radiocarbon dating in archaeology, and datable samples have never been submitted for analysis. While a number of artifact classes may be considered temporally or culturally diagnostic, e.g., beads, projectile points, and steatite objects, there are many gaps and contradictions in the chronological assessment of these artifacts, and, therefore, the chronological assessment of components and sites. The ability to place a site into a temporal and spatial framework is considered fundamental to further studies of past lifeways, settlement and subsistence patterns, and culture change.

Future research should first include radiocarbon dates on shell samples collected from CA-LAn-1269 and second a definition of site function and placement of the site within the spatial and temporal framework of the area. Because of the limited data available at the site, based on the test excavations, a relatively small sample (approximately 2 percent) will be sufficient to address these issues.

The second major site type category includes multi-use or multi-function sites (i.e., those at which more than one type of activity appears to have been performed). These sites may be further divided into permanent or semi-permanent sites and temporary ones. In the present context, however, the distinction between permanent and temporary sites is not clear-cut, representing a continuum of occupation of as few as several days up to as much as perhaps six or seven months. Moreover, none of the criteria for permanence are sufficient to unequivocally indicate permanent occupation. Site CA-LAn-291 is considered to be a multi-use site which was occupied on a permanent or semi-permanent basis.

Site CA-LAn-291 is considerably more complex than CA-LAn-1269 and is, therefore, more suited to the study of the interrelated issues of past lifeways, settlement-subsistence patterns, and culture change. As stated earlier, temporal placement of archaeological sites is fundamental to future research. Therefore, the first goal should be to obtain reliable chronometric dates from this site. This allows for regional comparisons both spatially and temporally.

The second goal, the identification of past lifeways and the study of settlement-subsistence patterns, will be used in conjunction with the chronometric dates and known ages of other sites in the region to study culture change. The presence of obsidian, jasper, two shell beads, and two bifaces is of particular interest. The obsidian and jasper suggest interregional trade and further investigations would help clarify relationships between coastal southern California and the eastern California deserts. The shell beads and bifaces are potentially diagnostic of particular time periods. Correlation of these artifacts to radiocarbon dates will be a valuable contribution to refining the local chronology. Additionally, the undisturbed portions of CA-LAn-291, as depicted in Figure 3, are well suited for the study of intra-site patterning by identifying activity areas and social organization. The data available at CA-LAn-291 are more diverse than at CA-LAn-1269, therefore, a 5 percent sample of the volume of the site will be required to reliably address these issues.

It is evident that historic land-use developments have, in places, essentially destroyed the prehistoric cultural remains at Bogdanovich Park and White Point. Nevertheless, based on the test excavations, it is clear that there are loci within CA-LAn-291 and -1269 that contain intact archaeological deposits. Judging from the test data, these include the western and northwestern portions of CA-LAn-291 and the northern and eastern portions of CA-LAn-1269.

CA-LAn-105 may be considered as a site separate from CA-LAn-291 or as a locus of CA-LAn-291. In any event, CA-LAn-105 has been severely disturbed and its relationship to CA-LAn-291 totally destroyed by the parking area (see Figure 3). Also, the minimal data recovered during the test excavations indicate that little new information could be gained by further investigations. Therefore, CA-LAn-105 offers little research potential.

NATIONAL REGISTER ELIGIBILITY

As one form of public heritage, archaeological sites are non-renewable resources (cf. Flinders-Petrie 1904:169-170). This alone is not considered sufficient cause for protective land-use management policies. To receive legal consideration, cultural resources must demonstrate "significance." The concept of cultural resource significance, and its demonstration, is a central issue in resource management and has stimulated much discussion and debate (among others; Lipe 1974; Moratto and Kelly

1976; Raab and Klinger 1977; Schiffer and Gummerman 1977; Sharrock and Grayson 1979). Significance can be evaluated any number of ways, e.g., in terms of historic/prehistoric, scientific, ethnic, public, or monetary value. Criteria for determining cultural resource significance and, therefore, National Register eligibility are stipulated in 36 CFR 60.4. The criterion most relevant to the present evaluations is that a given cultural resource "... has yielded or is likely to yield information important in prehistory or history." In terms of depositional integrity and potential research value, the prehistoric cultural resources of CA-LAn-291 and -1269 are here identified as likely to yield important prehistoric information and, therefore, are eligible for inclusion in the National Register of Historic Places.

In light of the results obtained during archaeological test excavations at Bogdanovich Park and White Point, the cultural deposits present at CA-LAn-291 and -1269 constitute National Register-eligible cultural resources. It is therefore recommended that, if avoidance is not feasible, a program of archaeological data recovery be undertaken at both project locations focusing on the acquisition of information useful in addressing the aforementioned theoretical, historical, and basic informational questions confronting prehistoric study in coastal southern California. On the basis of integrity and research potential, CA-LAn-105 is not considered eligible because it is not likely to yield information important to local or regional research questions.

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APPENDIX A

EVALUATION OF PALEONTOLOGICAL RESOURCES

EVALUATION OF PALEONTOLOGICAL RESOURCES

The Bogdanovich Park and White Point sites on Palos Verdes Peninsula are underlain by sedimentary strata ranging in age from Miocene to Late Pleistocene (Woodring, Bramlette, and Kew 1946). Literature and record searches indicated no recorded paleontological localities on either parcel, and field walkover surveys, conducted in October and early November, 1985, likewise revealed no surface occurrences of significant fossils. However, because strata underlying the subject parcels have produced scientifically significant fossils from other localities on the peninsula, it is strongly recommended that all future surface-cutting in paleontologically sensitive stratigraphic units (viz. the Altamira Shale member of the Monterey Formation) be closely monitored by a qualified paleontologist.

WHITE POINT

The White Point parcel is underlain by nonmarine and marine (?) terrace deposits of Late Pleistocene age that veneer marine strata assigned to the Altamira Shale member of the Monterey Formation of Miocene age (Woodring, Bramlette, and Kew 1946).

Terrace Deposits

The flat bench comprising the major portion of the property is immediately underlain by a veneer of nonmarine terrace cover consisting of reddish brown sand and rubble that consists of variously sized blocks of material eroded from the underlying Altamira Shale. Along the upper face of the sea cliff just south of the property, the sharp angular nonconformity separating the terrace deposits from the Altamira Shale is well exposed approximately 8-10 feet below the terrace level. This gives a thickness of perhaps 10 feet or less for the terrace deposits. No indigenous fossils have been reported from this nonmarine terrace material, which is Late Pleistocene in age.

Immediately underlying the thicker, nonmarine part of the terrace deposit is a thin interval (1-2 feet thick) of marine terrace sands and gravels that rest directly on the Altamira Shale. This interval has produced occasional Late Pleistocene marine molluscs and vertebrate fragments (Woodring, Bramlette, and Kew 1946), but no recorded paleontologic localities are known.

Altamira Shale Member, Monterey Formation

Underlying the terrace deposits in the bench area and immediately underlying the slope in the northern part of the property is the Altamira Shale member of the Monterey Formation. The Altamira is lithologically diverse, consisting of platy weathering diatomaceous shale, phosphatic shale, porcellanous shale and mudstone, siltstone, sandstone, fine pebble breccia (containing clasts of Catalina Schist), and large yellow tan to orange, very tightly indurated phosphatic-calcareous concretions, which simulate boulders. According to Woodring, Bramlette, and Kew (1946), foraminiferal microfossils in the Altamira Shale indicate a Late Miocene age and depositional depths of several hundred meters or more.

No fossil localities have been recorded from the Altamira Shale on the subject property; however, examination of eroded "float" material including siltstone and mudstone in the slope face produced some fish scales and a bone (whale?) fragment.

Two Natural History Museum of Los Angeles County vertebrate fossil localities (LACM 3888 near Royal Palms Beach Park and LACM 5162 at White Point) in the cliff face just south and southwest of the subject parcel produced dolphin, baleen whale, and sea lion fossils (L.G. Barnes, personal communication 1985). A quarry in the Altamira Shale, 0.5 mile west of White Point, produced a diverse fossil fish fauna (California Institute of Technology locality CIT 341; David 1943) in association with fossil land plants, seaweeds, and abundant whale bone fragments. Three other localities within the Altamira Shale (LACM 1348, LACM 1294), within a mile of the two project sites, also produced scientifically significant marine vertebrate fossils. Additionally, there are some 25 to 30 recorded vertebrate fossil localities in the Altamira Shale member on the Palos Verdes Peninsula, and literally dozens of unrecorded reports cf fossils collected by private individuals have been made (L.G. Barnes, personal communication 1985). The most productive lithologies in the Altamira are the hard concretions, some of which have been reworked into the overlying nonmarine terrace deposits. Some 700 major fossil specimens (including fish, shark, whale, sea lion, sea cow, seal, desmostylan, plants, and birds) are in the systematic collections of the Vertebrate Paleontology Section, Natural History Museum of Los Angeles County. This record of scientifically significant fossils gives the Altamira Shale a very high potential for yielding additional fossils during grading, and makes it paleontologically a highly sensitive stratigraphic unit.

The examination of some 35 backhoe trenches excavated in the western part of the expanded project area, Monday, December 23 and Thursday, December 26, 1985, exposed a sedimentary section thickness of about 6-8 ft, including: (a) 3-5 feet of dark gray to brownish black silty and sandy surficial alluvium (Late Pleistocene to Holocene); (b) 0-2 feet of sand and rounded pebble gravel, containing marine molluscs (Late Pleistocene); and (c) an underlying 3-6 feet of white to yellow tan to gray thin-bedded diatomaceous shale, mudstone, porcellanous shale, and minor sandstone, limestone, and dolomite (Upper Miocene).

The upper, dark surficial unit represents nonmarine terrace and soil and colluvial cover devoid of fossils, but containing an occasional fragment of molluscan (generally abalone) shell material still preserving nacreous (aragonite) luster. The basal unit, representing the Altamira Shale member of the Monterey Formation, produced locally abundant fish scales and occasional fish vertebrae fragments. One small whale bone fragment was observed in the cuttings pile at one trench. Most of the fish scales were were observed in a distinct olivaceous-orange tan laminated siltstone lithology. The most abundant and interesting fossils were observed in a sporadically distributed thin interval between the Altamira Shale and the dark nonmarine terrace deposits/soil. In about a dozen of the trenches, particularly those on or near the second terrace level, a moderately diverse molluscan fauna was observed in a yellow tan sand and rounded pebble gravel. Generally, where present, this unit, representing marine terrace deposits resting unconformably on the Altamira Shale and equivalent in age to the Upper Pleistone Palos Verdes Sand (Woodring, Bramlette, and Kew 1946), is a few inches to several feet thick. Whole shells of disarticulated bivalvε molluscs and broken to whole gastropods, representing a typical intertidal rocky shore fauna similar to that occurring today along the southern California coast (mussels, limpet gastropods, moon snails, rock oysters, etc.), are locally abundant, and at several trenches were collected from the walls and cuttings piles. One trench on the second terrace level revealed a well developed cut-and-fill scoured and channeled erosional surface on top of the Altamira Shale overlain by a several-inch to two-foot thick marine terrace interval containing abundant shell fragments and whole shells. In several trenches, rounded pebble and cobbles as well as angular blocks of Altamira shale lithology contain pholad clam borings, quite typical of the intertidal rocky coastal zone. Several large calcareous concretions were observed containing abundant borings filled with sand and shell fragments, as well as thin veneers of skeletal sand coating some concretions and blocks.

These discoveries, in their own right, are not scientifically significant and no mitigation measures are required at this time. However, the presence of fish scales and a few other vertebrate fragments in the Altamira Shale, as well as the locally abundant Pleistocene marine terrace molluscan fauna in the test trenches serve to underscore the importance of close monitoring of all future surface cutting activities related to the proposed project.

BOGDANOVICH PARK

The Bogdanovich Park site is underlain by the Altamira Shale member of the Monterey Formation. Exposures are poor owing to a thin soil and colluvial cover. Eroded concretions and slabs of porcellanous shale and siltstone and sandstone occur in the colluvial cover. Actual outcrops of the Altamira are limited to a few badly weathered exposures in the south-facing slopes along 25th Street.

Field walkover and examination of "float" material and scant outcrops produced a few macerated fish bones and scattered fish scales, and a bivalve mollusc (the latter reported by Dave Adler, Woodward-Clyde staff geologist). Additionally, the same potential for yielding important fossils and high sensitivity applies to the Altamira Shale at the Bogdanovich Park site.

IMPACTS AND MITIGATION

The proposed projects pose no threat of adverse impact on any known surface occurrences of fossils, and no recorded fossil localities are known to exist. Therefore, no special mitigation measures are required for either property site as they presently exist. However, there is a threat of adverse impact on paleontological resources that are deemed likely to exist in the shallow subsurface, within grading depths. Because of the scientifically important fossil localities in the Altamira Shale in close proximity to the project sites, combined with the Altamira Shale's track record of producing many significant marine vertebrate fossils from the Palos Verdes Peninsula, there is a high probability that surface-cutting and other grading that exposes these beds will unearth additional important fossils. Therefore, because of this likelihood and the high paleontological sensitivity of the Altamira Shale, it is imperative that all surface-cutting at either site affecting the Altamira Shale be closely monitored by a qualified (Natural History Museum of Los Angeles County-approved) paleontologist. This is the first major step toward forestalling adverse impact on potential paleontological resources and this recommendation is in accordance with Los Angeles City policy regarding paleontologic resources (Los Angeles City sphere of influence covers the Bogdanovich Park site). Both sites are considered to have equally high paleontologic sensitivity, although the Bogdanovich Park site contains considerably less Quaternary overburden.

The paleontologist retained to monitor all surface-cutting activity should coordinate his plans early on and schedule with the developer and grading contractor. If significant fossils are discovered during the development phase, the paleontologist should be at liberty to temporarily halt or divert grading operations until the fossils can be scientifically appraised onsite and further recommendations made regarding the disposition of the fossils. If deemed appropriate, the fossils should be collected. If large specimens or concentrations of specimens are involved, the paleontologist should have the authority to call in a team of assistants for salvage of specimens. All specimens collected should be donated to the Natural History Museum of Los Angeles County (L.G. Barnes, curator of fossil vertebrates), which is a fully accredited biosystematics institution staffed with professionals who are experts in all fields of paleontology. In particular, the most highly significant fossils in this area will be the marine vertebrates; the vertebrate paleontology section at the Natural History Museum specializes in Cenozoic, particularly Miocene, marine vertebrates. It is crucial that potentially scientifically important specimens be housed and curated at the proper institution. This is perhaps the most important consideration in mitigating adverse impact on paleontologic resources.

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